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COMB-HONEY CASES
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2½-lb. cans, 100 in dust-pr. carton	$4.00	31
5 lb. pails, 50 in dust proof carton	3.15	28
5-lb. pails, 12 in re-shipping case	1.00	10
10-lb. pails, 50 in dust-pr. carton	4.65	46
10-lb. pails, 6 in re-shipping case	.75	7

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"Canco" cans. This year with the 2¼" openings, which are easier to fill and empty. These cans are made from 107-lb. tin plate throughout, all seams are soldered. They are the best square cans on the market. Special prices on quantity orders. Strong wood case with cleated ends.

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1—60-lb. can in wood case	$0.70	$0.65	$0.60
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60-lb. cans in bulk, crated in lots of 20 or more cans, 36c each.

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Special tall white clear honey jars.
24—14-ounce honey jars in reshipping cases, per case, $0.98.
24—8-ounce honey jars in reshipping cases, per case, $0.75.
Diamond "I" Honey Jars:
24—16-ounce honey jars in re-shipping case, per case, $1.10.
22—32-ounce honey jars in re-shipping case, per case, $0.80.

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"You are within the Fourth Postal Zone of Lewis anywhere East of the Rocky Mountains."

The New

REVELATION WRAPPER

For Section Comb Honey

¶ *The latest food wrapper is now available for honey---the Lewis Revelation honey wrapper---now at 30 per cent lower price than the old style.*

¶ *It is made with a Cellophane front attached by automatic machines to Glassine, a very beautiful and attractive combination to intrigue buyers.*

¶ *Exclusive sale east of the Rockies, through Lewis, a sign the makers recognize Lewis service to honey producers.*

Revelation wrappers are much easier to handle and the Glassine is transparent enough so producer's name, net weight or other requirements may be stamped on the section and show through. An attractive border runs all the way around on each outer edge and the pretty new color combination of blue and yellow was selected for beauty and visibility upon advice of housewives and high-class grocers.

The wrapper is printed on the back, setting forth the values of honey and its storage care. Simple directions are included with each package and the new prices will be $4.40 per 500, or $1.10 per 100 for the 4¼ size; $5.75 per 500, and $1.30 per 100 for the 4 x5 size. Postage extra. Shipping weight: 500, 4 lbs.; 100, 1 lb. Sample wrapper sent postpaid for 5c anywhere in the U. S. A.

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G. B. LEWIS COMPANY

ESTABLISHED IN 1874

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BRANCHES: Albany, New York Lynchburg, Virginia Texarkana, Arkansas Sioux City, Iowa

Honey Markets

U. S. GOVERNMENT REPORT

Information from Producing Areas (first half of September.)

CALIFORNIA POINTS: Southern California Extensive requeening has been done this year. Bees have bred up well and have an unusually large supply of young bees to go into winter quarters, considering the dry year. Stores reported light in some areas, and honey coming in is insufficient for daily requirements. Stocks of honey are rapidly lessening. Demand from both domestic and foreign buyers is lighter now, but comparatively little honey remains to be sold. Recent selling prices reported as follows, f. o. b. shipping points, for ton lots or more: Water white sage, 11½-13c per lb.; white sage, 10½-12½c; extra light amber to light amber sage, 8½-9½c; white orange, 10½-12c; light amber buckwheat, 8-9c. Imperial Valley light amber alfalfa, slightly weaker at 7¼-7½c per lb. Beeswax, 25-28c per lb. Central California—Bees have stored considerable honeydew honey, some of which will be extracted for feed. Demand for honey for export is said to be very slow at this time. Light amber alfalfa has sold at 7-7⅜c per lb.; light amber alfalfa and cotton, 6¾-7¼c; light amber lima bean, 7⅜c; white orange, 11½c per lb. Northern California—Extracting of the thistle honey crop is about over. Prospects of a month ago have not been fully realized, and while some yards made a case to the colony, the average yield of star thistle is reported as 50-60 lbs. per colony. White thistle has sold, in case lots or more at 8½c per lb. Extra light amber, 8-8⅜c; light amber, 8c per lb; light amber alfalfa, 7-7¼c per lb. For water white thistle, dealers are offering 9c per lb. Beeswax, 26-30c per lb.

PACIFIC NORTHWEST—The crop in the Willamette Valley, although slightly better in quality, and larger in volume, than that of last year, is below average. The out-turn in the Yakima Valley is considered to be two-thirds of the usual crop. In the fireweed area along the coast, extracting is now getting under way, but will be delayed by men attending to other work. Following a very successful season, some apiaries will average 200 lbs. per colony. The bees are strong, and going into winter quarters in excellent condition. White fireweed has sold in large lots at 9-9½c per lb.; Mixed fireweed and other flowers, 8½c; white alfalfa and sweet clover, 8-9c per lb. Beeswax, 26c per lb.

INTERMOUNTAIN STATES—A heavy frost in Wyoming and Montana Sept. 3 and 4 and through the mountain districts and northeastern part of Colorado on Sept. 8, stopped all honey production. Extracting is well on the way toward completion. In most apiaries the yield has been disappointing. This was due in part to the scarcity of sweet clover bloom this year, and in part to the dry, hot weather. The shortest crop seems to have been obtained in Idaho and western Montana where some beekeepers report the lightest yield in over 10 years; but parts of Wyoming, Colorado and Nevada also report light yields. Others, especially in northern Colorado, the Arkansas Valley and southeastern Wyoming, secured good crops, so that the average for the entire area is probably nearly up to normal. Bees are generally in good condition to go into winter quarters. Recent heavy rains curtailed the late flow of nectar, but should be of great value in advancing next year's honey plants. Pollen has been stored more abundantly than usual, and the last extracting is not as white as earlier extractings in some sections. A good many cars have already been sold, for current and later shipment, but the car-lot demand has now slackened somewhat. The higher price in Germany is an encouraging feature. Local demand is good. Carlots of white sweet clover and alfalfa have sold at 7-7½c per lb., occasional car lower and few cars 7¾c per lb. Extra white, 7¾c; water white, 7½-8c per lb.; less carlots white, 8-10c; light amber, 6½-7c; dark, 6c. White comb has sold at $3.50-4.20 for best grade; $3.25-3.90 for second grade, and $3.00-3.50 for third grade. Beeswax, 25-31c per lb.

ARIZONA—Rains have been frequent during the past month, and will insure some fall honey on the desert and mountain locations. Some swarming reported. Bees are in good condition, and winter stores will be ample. Extracting is about over. Large lots of light amber alfalfa and cotton reported sold at $8.30-8.50 per case of 120 lbs. Light amber alfalfa, 6⅞-7c per lb.

SOUTHWESTERN STATES: Northeast Texas—Following a three months' drouth, 1½ inches of rain have fallen, which should insure a fall flow ample for winter stores, from cotton and other plants. About 40 lbs. per colony have been taken off in commercial apiaries. Light amber extracted has sold in large lots at 7-8c per lb.; 60s, 8-9c; small pails, 9-10c per lb.; bulk comb, 10-11c per lb. Beeswax, 30-35c per lb. East Texas—Bees are keeping their stores well supplied from wild senna, which grows profusely on damp fallow land, blooming from the middle of July to October. Southwest Texas—In spite of the long drouth bees have been bringing in some nectar from tie vine, and from cotton, which is still putting on squares. Cotton poisoning has weakened some colonies. The slow, continuous flow is ideal for queen-rearing and re-queening. A plentiful pollen supply is causing queens to fill the brood-nests, and colonies are generally in excellent condition. Rain on Sept. 10 will stimulate fall vegetation, and may result in considerable surplus. Large lots extracted quoted at 6-7c per lb.; 60s, 6-8c; small pails, 8-11c per lb.; bulk comb, small pails, 10-12c, few higher. Beeswax, 22-30c per lb., according to grade. West Texas—Recent rains will enable fall flowers to secrete nectar, which will help the bees fill up for winter. New Mexico—Nectar is still coming in from goldenrod and other autumn wild flowers. Honey is moving slowly. Arkansas—The three-months' drouth has been broken. Some late cotton is still in bloom, and a late flow is also expected from Spanish needle. The dry weather cut the honey crop in half.

PLAINS AREA: Red River Valley of North Dakota and western Minnesota—Frosts have stopped nectar secretion, and bees are not doing anything now. Brood-rearing has continued more satisfactorily than last year, and bees are going into winter quarters better supplied with stores. The yield is very spotted, ranging from 75 to 200 lbs. per colony, mostly 100-150 lbs. Several carloads of white sweet clover have sold at 7-7½c per lb.; smaller lots, 7½-8½c; small pails, 9c per lb.; few barrels, 6½c per lb. South Dakota, Iowa and Missouri River Valley of Nebraska—Conditions are very spotted. Right along the Missouri River in Iowa and Nebraska the crop is very short, but away from the river and over the line into South Dakota, a normal to bumper crop was taken off. Fall flow was limited because of drouths; the recent rains coming too late to be of value. Most extracting has been finished and a great deal of the crop is out of beekeepers' hands. Early demand was unusually good, and though it has slackened, many cars have already been sold. The general price for white sweet clover or white clover in car lots has been 7½-8c, with a few cars reported sold at 8½c per lb. Smaller lots of 60s have brought 8-10c per lb.; small pails, 10-11c. Chunk honey, sweet clover, has sold at 10-11c per lb. No. 1 white comb has moved at $3.50-4.80 per case; some off-grade, $2.25 per case.

From Producers' Associations

Answering your letter of the 3rd, we are pleased to report that our honey crop this year is the best we have had since 1925 as far as quality is concerned, and we have a somewhat

(Continued on page 676.)

Monthly Report of Honey Producers

Early in September we sent the following questions to honey producers: 1. What is the final average yield per colony this season in your locality of (a) extracted honey? (b) comb honey? 2. How does this compare with the average yield for your locality? Give answer in per cent. 3. At what price has honey been sold, or contracted for, if any, in large lots (carload or less) in your locality during the past month for (a) extracted honey, per lb? (b) comb honey, fancy and No. 1, per case? 4. What are prices when sold to grocers in case lots of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) comb honey, fancy and No. 1, per case? 5. What is the retail price to consumers in your locality of (a) extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) comb honey, fancy and No. 1, per section? 6. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair, or rapid. 7. What is the condition of the colonies for winter in your locality compared with normal, considering the number and age of bees and the supply of stores? Give answer in per cent. The replies received are tabulated below.

	Aver. yield per colony.		Pct. of aver. yield.	Large lots.		To grocers.		Retail.		Move ment.	Cond. of colo.
	Ex.	Comb.		Ex.	Comb.	Ex.	Comb.	Ex.	Comb.		
Ala. (J. M. Cutts)	..	..	..	..	..	..	..	..	..	..	90
Ark. (J. Johnson)	..	30	50	..	$4.80	..	$4.80	..	$.25	Slow	75
Calif. (Geo. Larinan)	50	..	..	$.12	..	..	..	$1.00	..	Rapid	100
Cal. (M. H. Mendleson)	40	..	..	.11½	..	..	..	1.25	..	Fair	100
Colo. (B. W. Hopper)	150	90	150	.09	3.50	.55	3.50	.65	.20	Fair	100
Conn. (Allen Latham)	..	..	..	..	..	1.00	6.25	1.30	.38	Fair	100
Conn. (A. W. Yates)	..	..	..	..	..	.90	7.00	1.25	.40	Fair	100
Fla. (C. C. Cook)	50	..	..	.06½	..	.60	..	.80	..	Slow	100
Fla. (H. Hewitt)	30	..	70	..	..	.60	..	.80	..	Slow	100
Ga. (J. J. Wilder)	60	45	100	.07	3.50	.60	4.00	1.00	.20	Fair	100
Ind. (T. C. Johnson)	..	..	..	..	..	.80	4.40	1.00	.23	Slow	100
Ind. (E. S. Miller)	150	100	200	..	..	.80	4.80	1.00	.25	Fair	95
Ia. (E. G. Brown)	60	40	40	.07½	..	.65	..	.85	.20	Rapid	100
Kans. (J. F. Garner)	75	65	..	..	4.00	.75	4.80	1.00	.30	Fair	100
La. (E. C. Davis)	50	..	50	.07	..	.60	..	.85	..	Fair	100
Me. (O. B. Griffin)	..	20	70	..	..	..	7.00	1.50	.35	Slow	95
Md. (S. G. Crocker)	40	25	75	..	..	1.00	5.50	1.50	.35	Slow	100
Mich. (I. D. Bartlett)	150	..	150	.08½	..	.60	..	.80	.30	Fair	100
Mich. (L. S. Griggs)	150	80	100	.08½	..	.55	4.50	.65	.25	Fair	100
Mich. (F. Markham)	150	80	150	.08½	4.00	.80	4.80	1.00	.25	Rapid	100
Minn. (F. Jager)	100	60	100	.08½	4.25	.65	4.50	1.00	.30	Good	100
Minn. (F. W. Ray)	100	..	110	.08½	3.75	.60	4.25	.75	..	Fair	100
Mo. (J. H. Fisbeck)	50	..	100	..	..	.80	..	1.00	..	Slow	100
Mo. (J. M. Romberger)	..	..	60	.12	3.75	..	4.00	1.00	.25	Slow	100
Nebr. (J. H. Wagner)	..	..	100	.09	4.00	.65	4.80	.75	.25	Fair	100
Nev. (E. G. Norton)	60	..	33½	..	..	..	..	..	..	Slow	100
Nev. (G. G. Schweis)	60	30	33	.07½	3.50	.75	3.75	.80	.23	Rapid	100
N. J. (E. G. Carr)	..	..	..	..	..	..	..	1.25	.35	Fair	100
N. Y. (Geo. B. Howe)	100	..	100	.09	4.80	.75	5.50	1.00	.33	Fair	100
N. Y. (F. W. Lesser)	60	40	100	.10	4.80	.70	5.40	.75	.30	Fair	100
N. C. (C. S. Baumgarner)	..	..	..	..	..	1.00	..	1.25	.30	Fair	90
N. C. (W. J. Martin)	100	75	75	.09	4.00	1.00	4.50	1.25	.35	Fair	100
N. D. (J. A. Munro)	..	..	..	.07¾	4.25	.67½	5.25	.80	.23	Fair	90
Ohio. (F. Leininger)	150	100	100	.08½	..	..	..	..	..	..	..
Ohio. (J. F. Moore)	125	..	150	.09	..	.75	4.00	1.00	.25	Fair	100
Okla. (J. Heueisen)	10	..	..	..	..	1.25	..	1.50	..	Fair	70
Okla. (C. F. Stiles)	60	..	125	..	..	.80	4.50	.95	.25	Fair	85
Ore. (H. A. Scullen)	50	..	75	..	..	.70	..	.90	..	Slow	100
Pa. (H. Beaver)	80	40	100	.09½	..	.70	3.80	.80	.25	Rapid	100
Pa. (D. C. Gilham)	45	30	90	..	..	1.05	6.30	1.35	.35	Slow	85
S. C. (E. S. Prevost)	50	..	..	..	..	1.00	..	1.25	.30	Fair	100
Tenn. (J. M. Buchanan)	100	50	125	..	..	..	..	1.25	.30	Fair	100
Texas. (T. A. Bowden)	65	..	100	..	..	.60	..	.75	..	Slow	90
Texas. (J. N. Mayes)	25	25	50	.08	6.00	..	..	..	..	Slow	80
Texas. (H. B. Parks)	65	..	100	.06	..	.65	..	.75	..	Fair	100
Vt. (J. E. Crane)	60	50	80	..	..	1.00	6.50	1.25	.35	Fair	100
Va. (T. C. Ashen)	40	30	50	..	..	.90	4.80	1.35	.25	Fair	80
Va. (L. N. Gravely)	50	30	45	.11	3.50	.65	3.50	.90	.25	Slow	75
W. Va. (T. K. Massie)	35	20	60	..	..	..	..	1.15	.25	Slow	40
Wis. (N. E. France)	100	75	110	..	..	.60	4.50	.75	.25	Slow	100
Wis. (E. Hassinger)	120	60	120	.09	..	.65	4.20	.85	.25	Fair	100
Wis. (Jas. Gwin)	125	60	110	.08	4.75	.60	5.00	.80	.25	Fair	..
Wyo. (C. H. Ranney)	90	..	..	.07¼	..	..	..	..	..	..	100

TIN CANS *and* PAILS

BEST QUALITY ON THE MARKET--JULY 1st, 1929

In Strong Dust-Proof Cartons---Pails with Sure-On Bails

	Shipment from Grand Rapids			Shipment from Chicago		
	Per 100	Per 500	Per 1000	Per 100	Per 500	Per 1000
2½-lb. cans, 100 in carton	$3.75	$17.75	$34.00	$3.25	$15.75	$30.8[illegible]
5-lb. pails, 50 in carton	6.50	31.35	60.00	5.75	27.50	53.75
10-lb. pails, 50 in carton	9.50	46.00	88.25	8.00	39.25	76.75

	From Grand Rapids		From Chicago or Detroit		
	One box	Ten boxes	Ten boxes	50 boxes	100 boxes
2½-lb. cans, 24 in wood box	$1.15	$10.00	$9.50	$45.00	
5-lb. pails, 12 in wood box	1.10	10.50	9.00	44.00	
10-lb. pails, 6 in wood box	.90	8.00	7.00	32.50	
60-lb. cans, 2 in wood box	1.10	10.00	9.00	43.50	$85.00
50-bulk crate	Per crate, $17.50		Per crate, $15.00		

PRICES ON CLEAR GLASS JARS

Panel or plain.		Shipment from Grand Rapids, Mich.			
	No. in pkg.	1 carton.	10 cartons.	25 cartons.	50 cartons.
½-lb.	2 doz.	$1.00	$9.00	$21.25	$40.00
1-lb.	2 doz.	1.25	11.50	26.25	50.00
2-lb.	1 doz.	.85	7.50	18.75	37.50

Shipments can be made direct from factory in Northern Indiana, in quantity lots if preferred.

A. G. Woodman Co. :: Grand Rapids, Mich.

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Name .....
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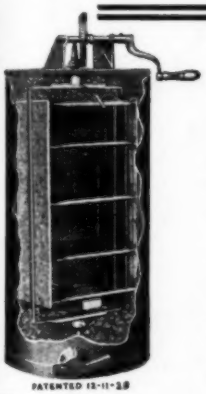
Town..... State.....



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"Backlot" 2-frame $11.75

Strongly built, ball bearing and easily operated. Lowest price 2-frame extractor made.

Size.	Pock.	Price.
5	9⅝x16	$11.75
9	12x16	15.25

"Backlot" Single Frame, $8.90

Fine for the small beekeeper. Ball bearing. Easily operated.

Size.	Pock.	Price.
3	9⅝x16	$8.90
7	12x16	11.40

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Superior 4-frame and 2-frame extractors. Capping extracting baskets to fit any make or size reversible extractor. Plain and steam-heated uncapping knives. Coolsmoke Bee Smokers, Honey Storage tanks. **Everything sold on a money-back guarantee.**

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PURCHASING goods now for next season's use has the special advantage of allowing you to assemble them during the less busy winter months.

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NOTE—See September issue of Gleanings for container prices—f. o. b. Lansing, Detroit, Chicago or Wheeling, W. Va.

M. H. Hunt & Son
Lansing Michigan

Honey Container Service from Syracuse

HAZEL-ATLAS CLEAR WHITE ROUND HONEY JARS

	1 case.	6 cases.
3½-oz. honey capacity, 48 to case, shipping weight, 15 lbs	$1.25	$7.20
8-oz. honey capacity, 24 to case, shipping weight, 12 lbs	.90	5.25
16-oz. honey capacity, 24 to case, shipping weight, 18 lbs	1.15	6.50
32-oz. honey capacity, 12 to case, shipping weight, 15 lbs	.90	5.15
48-oz. honey capacity, 12 to case, shipping weight 18 lbs	1.00	5.25

CORRUGATED PAPER CASES

This is the ideal case for delivering honey to the local trade but not for selling honey to the public. Honey in these cases finds sales resistance in the big markets.

Paper Shipping Cases for 4¼x1⅞ ..... Per 10, $2.20. Per 100, $21 00. Wt. 10, 28 lbs.
Paper Shipping Cases for 4¼x1½ ..... Per 10, 2.00. Per 100, 20.00. Wt. 10, 24 lbs.
Paper Shipping Cases for 4x5x1⅜ ..... Per 10, 2.00. Per 100, 20.00. Wt. 10, 24 lbs.
Silicate of Soda for sealing ..... 1 gallon, 60c; ½ gallon, 35c; 1 quart, 20c

PLAIN FRICTION-TOP CANS AND PAILS
PACKED IN DUST-PROOF CARTONS

	No. in cart.	Per cart.	No. in cart.	Per cart.	Ship. Wt.
2½-lb. cans (4x4 9-16)	12	$0.55	100	$3.75	35 lbs.
5-lb. pails (5x5¾)	6	.50	50	3.25	29 lbs.
10-lb. pails (6¼x7⅛)			50	4.75	45 lbs.

Write for special prices on any of the above in large quantities.

60-POUND SQUARE CANS, equipped with special 2¾" caps, and 3" four-finger grip wire handles in boxes of 2 each; one to 10 cases, $1.05 per case; 10 to 49 cases, $1.00 per case; 50 cases or more, 95c per case. Special low prices on carloads.

For prices on display cases, cartons, lithographed pails, signs, etc., see 1929 catalog or write.

A. I. Root Company of Syracuse

124 WILLIAMS ST. SYRACUSE, N. Y.

Veteran Wisconsin Exhibitor Says

Good Combs Secret of Strong Colonies

"I have been an exhibitor at the Wisconsin State fair for many years and have received many prizes. Something like thirty years ago I started using Dadant's foundation. The yearly wiring of frames to secure better combs was some job. Good combs became more and more important. For exhibit, a most perfect, white, well-filled comb is necessary. This, in itself, is beautiful and creates great interest.

"When Dadant's Wired Foundation came on the market, I adopted it at once. It saves me much painstaking, careful work; it reduces the amount of drone-cells; and the combs are built to the bottom bars, avoiding waste space. There are more cells for the queen to lay in, which means stronger colonies and much better beekeeping."

H. H. Moe,
Monroe,
Wisconsin

Good Combs
Strong Colonies
Large Crops

How well these three things go together! Successful beekeeping is determined by **good combs, strong colonies** and **little swarming.** The importance of the combs may be thought over-emphasized, but, more and more, prominent beekeepers are finding that they play a large part in results.

So many users of Dadant's Wired Foundation see a difference in their colonies from the good combs produced that they give the same endorsement as Moe. When foundation produces such satisfactory results for others, you may be sure it will do the same for you.

Ask the bees whether your combs are good or bad, they will tell you every time.

Dadant & Sons, Hamilton, Illinois

Gleanings in Bee Culture

October, 1929

Our Cornerstone

REMEMBER at all times that improved bee culture is our end and aim, and we trust no one will hesitate to give any facts from experience because they may tend to overthrow any particular person or "hobby." If any of our special plans don't work, or if anything we advertise has had its value overestimated, here in these pages is the place of all others to set the error right.—From A. I. Root's "Introductory" in the first issue of Gleanings in Bee Culture, Jan. 1, 1873.

Condition of the Clovers Beekeepers in portions of the clover region have been very much concerned about the effect of the hot dry weather during August upon the clover plants. In some localities the plants turned brown and appeared to be dead, so that prospects for clover honey next year were not at all good. However, when the rains finally came early in September the clover plants were revived to a surprising degree. While the condition is still somewhat spotted, both white clover and alsike clover again appear to be in good condition throughout most of the clover belt. White clover produced a great abundance of seed which, with favorable conditions next spring, should result in a good stand of new plants ready to yield nectar in 1931. Whether the excellent stand of old plants now on the ground will be in good nectar-yielding condition next summer depends largely upon the character of the winter and spring, but prospects at present are good for much of the clover region.

Honey Selling Helps Many beekeepers are taking advantage of the various honey selling helps so generously furnished free of charge by the Kellogg Company, Battle Creek, Mich., to greatly increase the use of honey in their communities. They find that the various folders, cards and stickers suggesting new ways to use honey are a great help in calling attention to honey in a different way. Besides it is more effective to have honey recommended by a great food concern that is not interested in selling honey than by beekeepers or honey packers. For instance, beekeepers who find that the restaurants in their towns do not serve honey, in many cases can induce them to do so by handing the proprietor one of the cards giving the Honey Krisp sundae recipe, described on page 208 in the April issue of this journal, and a couple of the window stickers calling attention to this delicious food combination. This sundae is made by pouring a tablespoonful of extracted honey over a serving of ice cream, then sprinkling on two tablespoonfuls of Kellogg's Rice Krispies. Since ice cream is now a popular dish during winter as well as summer, beekeepers can greatly help honey sales by obtaining a supply of these recipe cards and window stickers from the Kellogg Company and making an effort to induce every restaurant, school cafateria, soda fountain and candy store that serves ice cream to make and serve these delicious honey sundaes.

Wintering Only Good Colonies Letters are still reaching the Editor's desk asking what should be done with queenless colonies or colonies having drone-laying queens at this season. As a rule, such colonies are worthless this late in the season, especially in the North, where brood-rearing will soon be suspended entirely for the winter. Colonies that have been queenless for some time contain only old bees which die off early in the winter. Thus thousands of such colonies in neglected apiaries that die during the winter, will be counted as winter losses when, in fact, the loss should not be charged up to the winter. One can not lose what he does not have. As a rule, not many colonies that are in good condition in the fall die during the winter. A large percentage of the so-called winter losses are not winter losses at all, but losses of the summer or early fall.

In the South, where brood-rearing may

continue another month or more, it is still possible to build up colonies for winter by making conditions favorable for brood-rearing. In the North it is now too late for this. Colonies made up largely of old bees, on account of poor queens, or because of a dearth of nectar during the late summer, can not now be put into first-class condition for winter in the North. However, much can be done toward better conditions for wintering by eliminating the unfit now. Colonies having old queens and but few young bees, but are well supplied with honey, may well be united with colonies having young queens that are short of honey. After brood-rearing has ceased such colonies may be united simply by placing one brood-chamber on top of the other, thus making a two-story hive for winter. Queenless colonies may as well be broken up by shaking the bees from the combs and distributing the combs of honey where needed. The bees can be shaken on the ground and the hive moved away, thus allowing them to go into any hive they please. Or, if the colony contains a considerable number of young bees, it may be united with another colony lacking in strength. In these days of cheap package bees it is often a good plan to do a considerable amount of uniting this month, thus reducing the number of colonies to be wintered, then in the spring bring back the number desired by purchasing package bees from the South.

Inexpensive Winter Packing The use of tarred paper to hold winter packing in place around single-walled hives is apparently increasing. The chief objection to this method of packing bees for winter is the amount of labor involved in packing in the fall and unpacking in the spring. The labor item can be greatly reduced by using hot asphalt, such as is used in roofing work, to cement together the ends of the piece of tarred paper that goes around the hive, and also to cement the cover in place. A painter's blow torch can be used to heat the pot of asphalt so that it can be carried from hive to hive when cementing the covers in place. The asphalt should be quite hot so that it flows freely. It can be applied with a brush or with a swab made by tying a piece of cloth to the end of a stick.

If the apiary is located on dry ground, the rim of tarred paper can be set over the hive so that it rests directly on the ground. One piece of lath is then nailed to the projecting bottom-board and another to the bridge over the entrance to hold the paper in place. The bridge must be fastened to the hive so that no packing material can drop down behind it. If planer shavings or wheat chaff are to be used as packing material, a layer of forest leaves should be put in first. These can be pushed down to the ground around the hive-stand. They serve to prevent moisture being absorbed from the ground by the packing material. The packing material should be crowded into the corners first in order to prevent the sides bagging out. The sides and ends are filled in loosely, so that there will be no pressure to bulge out the paper. When the packing material is in place, the upper edge of the paper is folded down as in wrapping a package, after which a sheet of tarred paper large enough to cover the opening at the top can be cemented in place by the hot asphalt.

By using single-ply tarred paper known as "slater's felt," the cost of packing aside from labor is only a few cents per colony. Some use a heavier grade of tarred paper, which by careful handling, can be used a second time, while slater's felt is good for only one winter. A new paper sold under the trade name "Sisalkraft," is so strong that it can be used several years, especially if painted with asphalt paint.

Feeding to Supply Winter Stores During recent years less and less sugar is being fed to bees to supply winter stores. The lower prices of honey and the labor involved in feeding are rapidly bringing natural stores as winter food for bees into greater favor. This has been pointed out as a good thing for the honey market since the beekeeper thus becomes a large consumer of his own product, thus leaving less honey to be thrown upon the market. However, it does not always work out that way. In many cases the leaving of an abundance of honey for winter and spring has resulted in stronger colonies at the beginning of the honey flow, which in turn results in a larger crop, thus providing more honey for the market for a given number of colonies. This is certainly a wholesome trend.

About the only occasions for feeding sugar syrup to bees in these days are in queen-rearing operations during a dearth of nectar; an occasional season in poor localities where the bees may not store enough for their own use; and to supply winter stores in localities in the far north where the honey stores are not suitable for wintering. Even in such localities many beekeepers are now successfully wintering their colonies on natural stores by providing other conditions more favorable for successfull wintering. Furthermore, package bees are now so cheap that an occasonal winter loss in the North brought about by poor stores is not the calamity that it used to be.

Preventing Granulation in Fall Feed The time-honored method of preventing crystallization in sugar syrup in the feeders or in the combs soon after being fed is that of adding a small amount of tartaric acid to the syrup, then boiling it for a short time to bring about partial inversion. In order to avoid boiling the syrup and the use of acid many beekeepers have practiced feeding thin syrup earlier in the season, thus giving the bees time to ripen it before cold weather. In this ripening process the sugar is inverted sufficiently to prevent trouble from crystallization. A serious objection to this plan is the greater loss of weight during the process of feeding and ripening that takes place when thick syrup is fed after brood-rearing has ceased. Another objection in the North, where feeding is practiced only to correct the quality of winter stores, is that inferior fall honey may be stored after the early feeding has been done, thus starting the bees off on poor honey stores instead of sugar stores. Therefore, during recent years beekeepers in the North, who feed to correct the quality of winter stores, postpone feeding often until late in October. A heavy syrup is then given.

In feeding late in the season some have had no trouble from crystallization when the syrup is made of two parts of sugar to one part of water without boiling with acid, while others have had considerable difficulty with crystallization in the feeders or in the combs soon after being stored. This trouble can usually be avoided by adding just a little more water, making the syrup slightly less than two parts of sugar to one part of water either by weight or by measure. It can also be prevented by adding a small amount of tartaric acid (an even teaspoonful for 15 to 20 pounds of sugar) to the syrup, then boiling it for 10 or 15 minutes. Apparently all that is necessary is to prevent crystallization during the first few days after the syrup is stored, since the bees in handling the syrup, even when fed late in the season, add enzymes which slowly bring about inversion sufficient to prevent crystallization.

Some have reasoned that since crystallization is prevented by inversion (the changing of cane sugar (sucrose) into levulose and dextrose) that the perfect winter feed would be syrup completely inverted. However, this is not the case. Chemists discovered several years ago that a partially inverted syrup is less inclined to crystallize than completely inverted syrup and that thick syrup remains liquid best when inversion is only about half completed. When inversion is carried too far the dextrose crystallizes out.

In some experiments conducted here at Medina a few years ago in feeding thick syrup in October and November, it was found that there is a slight inversion as soon as the syrup is stored in the combs and that inversion continues slowly until it is practically complete. Therefore, if the syrup does not crystallize during the first few days, it does not do so until toward spring or even later when inversion is more nearly complete. If inversion were half or more complete when the syrup is fed to the bees the enzymes added by the bees in handling would hasten inversion so that there would be more trouble from crystallization than if the syrup were only slightly inverted or not at all when fed. Apparently this explains why feeding back extracted honey results in the stored honey granulating so quickly.

In some recent experiments, Morland, an English investigator, on testing syrup that had been stored by bees, found that inversion had proceeded further in the case of plain syrup than where acid had been used, thus indicating that acid tends to slow down the process of inversion by the bees. It is possible that further investigation will prove this to be advantageous, since crystallization in late winter or spring is brought about by inversion being carried too far.

Preparing Bees for Winter

Morley Pettit

How to Increase Profits by Reducing Risk of Winter Losses

The honey producer's chief concern is to have good strong colonies at the beginning of the main honey flow. His other main problem is to keep the hives overflowing with bees in a cheerful working mood as long as there is honey to be had in the flowers. The former is accomplished by good queens, good wintering, and the prevention of disease; the latter, by holding colonies together without even a desire to swarm. The beekeeper who is able to secure and maintain these happy conditions in his apiaries has done his best, and the result is in the lap of the gods.

Successful wintering of bees depends on securing for each colony plenty of suitable food, plenty of young bees, and adequate protection from cold. A discussion of wintering involves a little bit of history and geography, climate and seasons, types of hives, speculation and gambling. The love of taking a chance is deep-seated in human nature. All human achievements have been founded on this spirit of adventure. The beekeeper is no exception. Like every other agricultural producer he is gambling on the weather, and enjoys it. He is fascinated by the thought of requeening and feeding his colonies and tucking them away warm for the long winter with the hope that, when flowers bloom again, they will be strong and ready for the honey flow. With what a thrill he takes his first peep into each hive next spring wondering whether rows upon rows of inquisitive eyes will peer out at him between the top-bars, or whether investigation will reveal weakness and death. Whenever he finds that the turn has gone against him the true beekeeper immediately plans to improve his methods and beat the game next year.

In a favorable season almost anyone who gives bees reasonable care is a good beekeeper; but in bad years only the extra good can survive. Like those who are playing the horses, the real estate boom or the stock market, the beekeeper makes his investment hoping that time will bring a profitable return. In his case he invests labor and young queens and feed hoping that the winter, spring and summer will favor him. Or he may speculate in package bees from the South for the same purpose. He takes his chances on the wintering of the bees or the success of the packages to get him good colonies, then he takes another chance on the summer rains, heat and sunshine. As the wise speculator in stocks spreads his ventures over a number of different issues, so the wise speculator in bees spreads his risks over both wintered colonies and packages, and over a fairly wide area of apiary locations.

Eliminating the Unfit Before Preparing Bees for Winter

As long as beekeeping literature has been published in northern latitudes wintering has held a prominent place in discussions. Before the development of the southern package shipping trade the northern beekeeper was even more vitally concerned in the wintering of his bees than he is now when his losses can be so easily replaced. All considered, there is not very much difference between the cost of wintering bees in the North and that of installing packages in spring from the South. Some beekeepers are even reducing their winter risks and autumn expenses for labor and feed by making decrease instead of increase at the conclusion of the honey flow.

This very greatly simplifies fall management. In fact, it relieves one of considerable labor and anxiety during the whole latter part of the honey season. Instead of saying that every colony should be carefully requeened, or that the queen-right condition of each should be anxiously guarded, we now say that the queen condition should be noted, and then as soon as there is opportunity after the honey is off, all colonies which are not known to be in the best of queen condition are disposed of, either by uniting or by the use of cyanogas. This reduces the numbers to a reasonable proportion of the number desired for next season, and greatly increases the chances of a small percentage of winter loss.

In view of the fact that every colony which dies in winter or peters out in spring takes with it the labor that was spent in preparing it for winter and also the honey or sugar given it for winter stores, this reduction of loss is highly

profitable to the speculator in bees. If received in good time and in good order and properly handled, packages will build up and give returns that compare very favorably with those received from wintered colonies. There is one big point that should not be overlooked in their care. They need combs of honey and pollen for feed. I believe this is very important. Then, of course, it is essential to give them good protection from cold winds, and packing as for winter will help a lot.

Wintering in Single-story Increases Labor

To come back to the history and geography of wintering, I am reminded of the methods of the keepers of what we now consider only a few colonies. My father wintered in the cellar, and about the end of September each hive was weighed and fed according to its estimated needs. The syrup was made on the kitchen stove, much to the inconvenience of the rest of the family. Later, when honey prices were good and sugar cheap, we cut out the weighing and fed each hive all it would take.

I still believe that so far as feeding goes the highest percentage of wintering success is obtained in this way; but it calls for a great deal of labor and expense. There is no food-chamber and the colony is wintered in a single-story eight- or ten-frame Langstroth body. A feeder-board is used and the top of the hive is about covered with ten-pound pails of syrup. These are warmly packed in the top of the winter case or an empty super and are left on about a week, then taken off and what syrup has not been carried down is supposed to be refused because of lack of space.

While wintering well in any climate the no-food-chamber hive has several disadvantages. The honey all comes off at extracting time and a dry fall may starve the colony. Some may say that a larger brood-chamber would remove this risk; but I have had more fall starving in Jumbo hives than in Langstroth. The 10-frame Jumbo hive is just as apt to be full of brood and pollen at extracting time as the 10-frame Langstroth hive. In fact, I have operated Jumbo and Langstroth hives side by side for years and can see no advantage whatever in the larger frame. A large brood-chamber is most desirable at certain times, but we get it in another way and retain the advantage of a convenient standard frame.

The chief advantage of the food-chamber hive is the ease with which it is fed in the fall and the fact that it requires no attention in spring until well on in May, for it has room for brood and a possible spring honey flow. Then Editor Demuth has given us another idea which I have not tested nor fully weighed and digested—requeening by using the food-chamber as a nucleus and setting it back on so that the young queen will do the dequeening. Talk about "letting George do it!" This is where George lets his young queen do the dirty work of hunting out an old queen and killing her.

Honey for Winter Stores in Far North

My latest idea on feed for winter is to use honey almost exclusively. Of course there is nothing new about that, but I have been such a strong advocate of sugar for winter stores that, to older readers, it may seem necessary to note the change. Where there is not much difference in returns between light and colored honeys I would feed only the cream of the light honey crop; but where there is a very considerable difference so that light honey is worth more than granulated sugar and dark fall honey worth considerably less, we might as well increase our profits by selling the best and using the other for feed. Since we are taking chances anyway, why not be real sports? The interesting part of it is experience shows that the risk may not be so great as it seems. At any rate beekeepers farther north than I am are doing it and getting by.

Last fall we were able to cut our sugar bill away down by supplementing the shallow food-chamber with combs of fall honey put down into the brood-chamber and by many more stored away in the honey-house for use in case of need the following spring. Results were eminently satisfactory and there was a nice increase in the profits from the season's operations. To show that the test was pretty complete, I will mention one apiary which packed its food-chambers and brood-chambers quite late with a yellow honey apparently from sow thistle. This stuff was granulating in the combs that were brought home before we could get it extracted, and it looked like a pretty poor winter feed, yet the bees wintered almost perfectly on it. It would seem wise to take chances on such a proposition, take one's profits the years that it succeeds, then if and when a loss should come re-

place with packages and still make a crop.

In apiaries where there is no foul brood it would seem like the best plan for disposing of fall honey to use it as feed for winter and for next spring's packages. My trouble now is that for years I have saved and used above excluders a lot of bad combs that could not be put down as feed combs when filled with honey. These will have to be done away with. The wax will buy new foundation, then any comb of honey may be used for feed.

Besides putting down combs of honey for feed I would go a step farther. When the supers come off finally there are often numbers of combs containing only a little thin honey. It is a big job to put all these through the extractor and when it is done you have as one of the helpers once expressed it, "more supers than soup." Why not just stack these in the yard and let the bees clean them out before taking them home? They will do this while you are at some more important work and will relieve you of the problem of what to do with the stuff after you get it. The colonies which clean out all our supers after extracting require no feeding and winter perfectly.

From the southern islands of Florida to the northern valleys of Canada the range of climate is so great that only very general suggestions can be offered on methods of wintering. Each beekeeper will soon learn by experience how many pounds of feed are needed to play safe. In the extreme north it is doubtless wise to use only the single story, well filled with feed, well insulated and sheltered. Farther south the shallow food-chamber can be used, and farther still the straight double brood-chamber with the upper half practically full of stores when winter comes. This is the most convenient plan as it eliminates odd-sized frames. When you reach the point southward where winter packing can be dispensed with, costs are at once cut very materially. This will again depend on the sale value of honey, for if the labor cost of packing is greater than the saving in stores, it does not pay to pack.

Georgetown, Ontario.

The Imperial Valley of California

E. R. Root

Beekeeping in a Region Which Is Below the Level of the Sea

"Say, Jim, this is my brother-in-law, Ernest, of Medina, Ohio. You will do him and me a favor if you will drive him around and introduce him to the beekeepers. I am going over to see Joe to buy his honey and I'll be back about noon." About that time we would be introduced to Mrs. Beekeeper and a good dinner.

This is the way my little (?) brother-in-law, L. W. Boyden, would sometimes get me next to the beekeeper and incidentally to a good dinner, for L. W. with his Ford somehow managed to get around about eating time. With his glad hand, his hearty "Hello, Jack or John," he makes many friends everywhere he goes.

If there is any man who knows southern California beekeeping and who can call the beekeepers Jim, Joe, John, Sam and Red, yet not call the fellow by the wrong name, my little brother-in-law is that man. "Little"—he weighs two hundred and then some. He knows the beekeepers' problems because he has worked side by side with them, in some cases helping to get the crop if it came, although too often it didn't come.

When near the border he would say, "Now, Ernest, I am going to take you into Mexico."

"My wife won't let me go because I may get shot," I protested.

"Bah, no! You'll be much safer there than in Chicago or Cleveland," and he was right. Across the border we went. We met the same glad hand of the Mexicans that we did north of the international boundary. Mr. Boyden's Spanish was nothing extra but with a friend, S. P. Pruit, who could talk Spanish, he got along nicely.

At the time I was in the Imperial Valley "L. W." was buying honey for Preserves & Honey, Inc., at Alhambra. On this buying trip we tried out his new Ford. That new Henry is all that has been claimed for it. Over rough or smooth roads it took nobody's dust—at least "L. W." didn't let it. Henry doesn't pay me

to say this; but he deserves something for what he has done for the beekeeper.

Prominent Imperial Valley Beekeeper

I now wish to introduce you to that brother-in-law himself, who married A. I. Root's youngest daughter, Carrie Bell, and to one of his very good friends of the Imperial Valley, Mr. Tabor. (See Figs. 1 and 2.) L. W. Boyden is vice-president of The A. L. Boyden Co., at Alhambra, Cal. Rex W. Tabor, of Brawley, Cal., is one of the best beekeepers in the whole United States. Years ago he worked for both Elwood and Hetherington of New York state, formerly the two largest beekeepers in this country. He has kept bees in Nevada and other western states. He came to California and settled first in the orange district, then finally landed at Brawley, where he is now located. When I asked him why he came to the Imperial Valley he said it was because the seasons there are more sure of a crop. While some seasons one would get more honey in the sage and orange districts, he was more sure of a paying average in the Imperial Valley. While the honey flow from alfalfa is slow it extends through April and May.

Fig. 1.—L. W. Boyden.

Fig. 2.—Rex W. Tabor.

Fig. 3.—One end of the Tabor honey-house.

An Ideal Honey House

His building and equipment were some of the best I have seen anywhere as Figs. 3 and 4 will show. The building is new. It has a concrete foundation and floor with a door wide enough for a loaded truck. In Fig. 4 will be noted a series of tanks for the storage and sedimentation of the honey. In front and just below the honey gate of each tank is a pit to receive 60-pound square cans to be filled. The tanks are on the general level of the floor so that when filled their weight is supported directly by the concrete floor laid

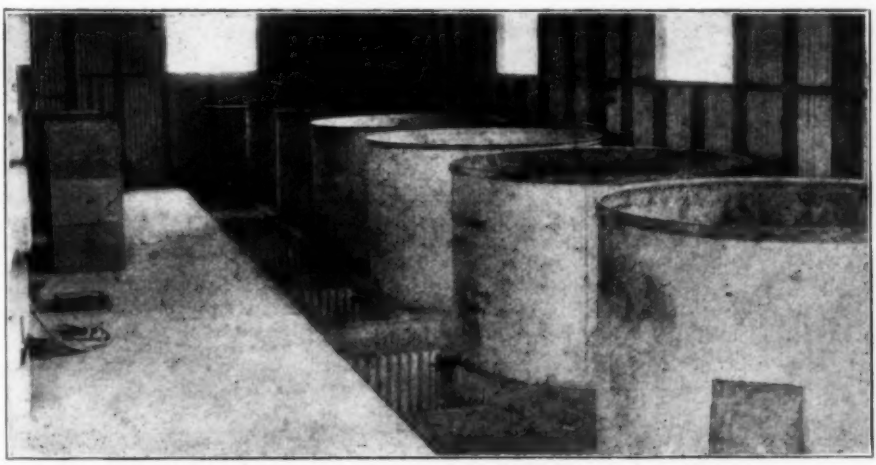


Fig. 4.—Tank room in Mr. Tabor's honey-house. Concrete pits below the honey gates afford room for filling cans.

Fig. 5.—Stored equipment and honey tanks of F. J. Austin & Sons, located out of doors. Elaborate honey-houses are not so necessary in Imperial Valley.

on earth. This arrangement also affords easy access to the tanks.

Tight Room for Fumigating Combs

In one corner of the building is a good sized room for storing combs when not in use. It is bee-tight and practically air-tight so that Mr. Tabor can fumigate his combs, for the moth larvae is very troublesome in this warm climate. I suggested that he could also try out the Small-Smith plan of sterilizing the combs for American foul brood by keeping them there surrounded with formalin gas during the winter.

While it is true that Jay Smith (see American Bee Journal for April and May of last year and A. V. Small in December issue of this journal for 1927 and October, 1928) contemplated only the fumigation of a few combs in sealed hive-bodies, using only a small quantity of formaldehyde, 40% solution, there is no reason why a closed room, such as Mr. Tabor has, could not be used for fumigating several thousand combs and using a larger quantity of fumigant, especially if the combs were kept under fumigation all winter, say, three or even six months. If the method will work on a small scale, it certainly will work on a large one, when a longer period of time is used. It would do no harm to sterilize all combs not in use every winter, especially if there were suspicion that some of them contained disease.

While on the subject of storage tanks in California, I might remark that many beekeepers put them out of doors as do F. J. Austin & Sons, who also live at Brawley. (See Figs. 5 and 6.) In front of each tank a hole or pit is dug in the ground to admit a square can to be filled from the honey gate. As it seldom rains in the Imperial Valley these pits hold their shape.

Fig. 6.—A close view of honey tanks shown in Fig. 5. The tanks are close to the ground and holes are dug into the earth to make room to fill the cans.

Adulteration of Honey

Dr. E. F. Phillips

Brief History of the Efforts to Protect Honey Leading up to the Enactment of the Pure Food Law

When the psalmist said that all men are liars, he must have been in almost as pessimistic a mood as are beekeepers when they learn of some new effort to adulterate honey. Any such effort is almost enough to cause one to lose faith in humankind. To add or to remove anything from so wonderful a natural product as honey is sacrilege in the eyes of the honey lovers, who believe, and have reason for their belief, that honey can not be improved as it comes from the hives.

There was a day when adulteration of honey was a common practice, but that day has happily passed, at least in the United States and Canada. In all other parts of the civilized world, laws similar to those of these two countries are being passed which are equally effective in making the road of the dishonest food adulterator a stony one. When one compares conditions as they were with what they are today with respect to food adulteration, he comes almost to believe that this old world is growing better. While honey adulteration is for us a thing of the past, it is interesting to record some of the incidents in beekeeping of an earlier day when this practice was common and to review a few of the efforts which beekeepers made to bring about a change. This is all the more worth while because of the lamentable fact that the ogre of adulteration sticks up its evil head at intervals to show that there is still life in it. While salutary laws, enacted by demand of the consuming public, may reduce this evil, we may not expect to see the danger entirely eliminated until the millenium.

Extracted Honey Easily Imitated

Honey when freshly extracted is a sweet, clear liquid, and since other sweet clear liquids can be manufactured artificially which roughly resemble honey in appearance and to a lesser degree in taste, one should not be surprised that additions of inferior and cheaper sweets have been made to honey, the whole to be sold under the good name of honey. This is all the more likely to happen when a manufacturing concern undertakes to manufacture a sweet, clear liquid somewhat suggesting honey in appearance and advertises it for use in adulteration, as was once done. With this possibility and even invitation, it is not strange that ignorant, greedy and dishonest men fall, but a considerable share of blame should be placed at the door of those who issued the invitation and urged the use of their product to adulterate honey and other good foods. Increased profit is a mighty incentive to dishonesty, even though there are some people inherently so dishonest that they will practice fraud even though it does not pay financially.

Early Methods of Adulteration

Nobody knows when honey adulteration began, but it was doubtless far back in history. The first adulterants added were sugar syrup or other common and easily available sweets, a type of dishonest practice now easily detected and no longer to be feared. When the manufacture of sweets from starch became common, the detection of their addition to honey was less easy, and there was at that time no legal protection for foods which was adequate to prevent adulteration.

Comb honey, as every beekeeper knows, can not be adulterated. The words "can not" in this sentence need some explanation. It is within the range of possibility that bees could be fed cane sugar syrup or some other sweet attractive to bees, that they could be given enough to fill some sections and that these sections might be removed from the hives and sold. Doubtless there have been some beekeepers who were so dishonest as to try this. The safety of beekeeping lies in the fact that the procedure results in heavy financial loss, and for too many people the greatest incentive to honesty is financial loss. Under these conditions, comb honey is not and has not been adulterated. In "the good old days" when food adulteration was common in this country, most beekeepers produced their crops in the form of comb honey as a guarantee of the purity of the crop to their consumers, and, in fact, it is probable that comb honey remained the dominant type of honey on the market much longer than otherwise might have been the case if food adulteration had been controlled at that time.

Advent of the Pure Food Law

In 1906 Dr. Harvey W. Wiley, with

help from beekeepers and other honest folks, was able to have the present food and drugs act enacted by the Congress, a red letter day for honest and pure foods in this country. It so happened that the same year W. Z. Hutchinson, one of the former great leaders in beekeeping, gave up comb-honey production, moved his bees to northern Michigan and undertook the production of extracted honey, telling his readers in the Beekeepers' Review each month how he was coming on. This, perhaps more than any other single event in beekeeping of that day, again turned the attention of American beekeepers to extracted-honey production. Other factors also played a part, but it is unnecessary here to discuss all these historical influences.

But there had been an earlier period when extracted honey was more commonly produced, before the one-piece section and comb foundation were invented. From that day on, some beekeepers had continued to produce extracted honey, and it was by no means uncommon on the market. But before the passage of the food and drugs act in 1906, the honest producer of extracted honey stood a poor chance in the market in competition with dishonest dealers who perhaps bought a little honey, added to it quantities of commercial glucose and sold the whole as honey. Sometimes a bit of comb or some other thing to suggest real "bee honey" appeared in the jars, thus adding to the probability of deception. It is small wonder that beekeepers as a rule found it difficult to compete with such stuff and therefore produced comb honey.

No effort has been made to run down all dishonest beekeepers of that past day, but in reading the journals and in conversations with older beekeepers, I have been able to learn of only one beekeeper who gave way to the temptation so alluringly held before his eyes and bought commercial glucose to add to his honey crop. The dishonesty of this beekeeper was discovered and he was exposed in his fraud. Within a short time he was no longer counted among honey producers and turned his attention to another line of activity. It seems safe to assume that the real crooks of this olden day were honey dealers and bottlers, some of whom were exposed by publication of analyses of their products.

Early Efforts to Protect Honey from Adulteration

It is interesting to record here the fact that beekeepers began early to insist on the legal protection of this product against adulteration. Just when they first began this effort, it is impossible to say, but certainly one of the very earliest efforts in this direction is to be credited to Mr. Charles Dadant, father of the present editor of the American Bee Journal. The elder Dadant was a producer of extracted honey throughout the period when comb honey was so generally produced and thus was brought face to face with the menace more intimately than most other beekeepers. Quite aside from his personal losses and inconveniences, he was a man who stood for honesty and his advocacy of legislation against adulteration of honey can not be assumed to have arisen solely from his personal losses due to the adulterated products on the market.

The August, 1878, issue of the American Bee Journal contains a copy of a petition which he at that time circulated widely among beekeepers, and the number of signatures obtained was large. The subject seems to have been introduced to beekeepers at a convention held at Burlington, Iowa, May, 1878. That this effort did not lead to immediate results is in no sense to the discredit of those who proposed and advocated it: they were merely ahead of their time, and many years must pass before public sentiment caught up to the sentiment of the beekeepers. It seems strange now to look back on these efforts and difficult to believe that anybody could have failed to endorse such a movement.

Previous to 1906 many beekeepers did not feel friendly toward Doctor Wiley, because of his publication in 1882 of an article on food adulteration in which he stated that comb honey was being adulterated by an ingenious Yankee who made an artificial comb of paraffine, filled it with commercial glucose and capped it by machine. This was an absurd tale for which there was no foundation, and shortly thereafter it was dubbed by Doctor Wiley a scientific pleasantry. This break in friendly relations was unfortunate, for it perhaps prevented many beekeepers from endorsing and assisting the movement led effectually for so many years by Dr. Wiley, finally culminating in 1906 in the present food and drugs act.

Part Played by Beekeepers in Enactment of Pure Food Law

However, this breach did not prevent some beekeepers from stepping into the

ranks at the right moment to give valiant assistance in the passage of the law which he advocated. Beekeeping records will show that shortly before 1905 there was organized an association known as the American Honey Producers' League (not to be confused with the present organization of that name which has no relation to the former one), for the purpose of promoting the sale of honey. The records will further show that Doctor Miller, Geo. W. York, E. R. Root and others back of this movement became discouraged in 1905 and finally turned over to the National Beekeepers' Association a sum of several hundred dollars to be expended by the association for a similar purpose. The published records do not show, however, that at the meeting of the directors at which this League was disbanded, a proposal was made to donate an enormous number of pamphlets denouncing Doctor Wiley. These were offered for distribution throughout the country without cost to the League. Fortunately this proposal was not accepted and the League is without blame for future developments. It shortly thereafter appeared that this proposal came directly or indirectly from opponents of the food and drugs act then before Congress and in danger of passage—that is, in "danger" from the point of view of certain dishonest manufacturers.

Just how this proposal came to be suspected, how the movement was successfully circumvented and how these opponents of the food and drugs act were caught in a trap are things which need not at this time be related, but after Doctor Wiley, E. R. Root and I are off the scenes, perhaps this interesting tale may be told. At any rate, with the help of Doctor Miller, who took much glee in hoisting these men on their own petard, we drove a crooked lawyer into a most beautiful trap and Doctor Wiley sprung it. There is reason to believe that from that moment the passage of the food and drugs act became more probable, for the unprincipled opposition of one group faded away after this trap was sprung. We are at least entitled to claim that beekeepers were not asleep when the food and drugs act was passed, and we may properly claim for them some credit for its passage, this credit being duly divided with other honest people who would no longer tolerate conditions in foodstuffs as they were before 1906.

The Artificial Egg Story

The story about the artificially manufactured comb honey by the ingenious Yankee spread throughout the country, partly because some beekeepers spent so much time and effort denouncing Doctor Wiley for having started it. It is unnecessary now to attempt to place the blame for these attacks on him, but the constant denial of the story probably did much to spread it. It seems to have been generally believed for in that day the public was gullible. A certain editor of a certain bee journal thought to combat this story in some manner, so after consulting a syndicate writer named Phillips (no relative of the present writer), the plan adopted was to tell a bigger story, wholly unbelievable, and to attach the artificial comb honey story to it, with the thought that the public would then swallow none of it. It would be quite improper when writing for Gleanings in Bee Culture to name the editor who evolved this plan, but perhaps some day he may confess. With the aid of the syndicate writer a story was evolved about an ingenious Yankee who had made an artificial hen's egg, so perfect in fact that the only way whereby its artificiality could be detected was to hatch it. If the chicks were normally feathered, the original egg had been genuine, but if feathers were lacking, it had come from the artificial egg, since the ingenious Yankee had been unable to locate the stuff of which feathers are formed. In these sophisticated days one would think that surely this story would merely raise a smile and that it and the attached artificial comb-honey story would be laughed out of court, but nothing of the sort happened. The public seems to have believed both stories! For fear that some of the readers of this journal may attempt to "kid" Mr. Demuth about this incident, it should be stated that when this happened, he was not editor of Gleanings. If any kidding is to be done, one must go farther back in history.

Before the passage of the food and drugs act, there was probably no food in the United States more subject to adulteration than honey, at least a statement to that effect is credited to Doctor Wiley, and nobody knew better than he. Of course all this applied to extracted honey, and in that day it was not wise for a beekeeper to attempt to place his honey on the market in competition with com-

mercial glucose dressed up to resemble honey. The year 1906 is not so long ago and some of us can remember that far back, yet it is far enough back in history for many of us to have forgotten the deplorable conditions then existing. How things have changed with respect to our foods! Since 1906 the officers responsible for the enforcement of the food and drugs act have been able to detect only about 20 cases of honey adulteration throughout the United States, and all but one of the cases were discovered previous to 1920.

Ithaca, N. Y.

Beekeepers of Many Nations Meet

W. J. Nolan

World's Beekeeping Talent Exchange Ideas at a Great Meeting in Berlin, Germany

International apicultural congresses have been held for many years but the recent gathering of the Apis Club at Berlin, Germany, from August 9 to August 12, undoubtedly eclipses all previous similar gatherings both in number of countries represented and in program and entertainment provided for those present. Over 175 individuals representing some twenty different nations and speaking over a dozen languages were in attendance. Among the nations were Germany, France, England, Switzerland, Russia, Czechoslovakia, Roumania, Sweden, Jugoslavia, Denmark, India, Latvia, Austria, Italy, Hungary. Spain, Holland, and the United States. The languages included German, French, English, Russian, Czech, Swedish, Italian, Dutch, Danish, Latvian, Roumanian, Serbian and Indian.

At no previous meeting have so many people known internationally for their work in beekeeping been assembled. Among the many outstanding personalities the following deserve special mention: Mr. Baldensperger the most widely-known personally and the most highly esteemed international figure in beekeeping today; Dr. Armbruster, retiring president of the Apis Club, always in the best of humor and ready with a joke; Miss Betts, the new president, enthusiastic and energetic in promoting the cause of beekeeping; and Miss Nora Baldensperger, who rendered invaluable service in translating the addresses into English, French or German, as occasion demanded. Miss Baldensperger's work was especially noteworthy in that she was able to boil down lengthy addresses to remarks requiring only a few minutes without missing essential points.

Among others present whose names have appeared more or less frequently in American bee journals were: Doctors Becker, Borchert, Evenius, Ewert, Himmer, Koch, Nachtsheim, Rosch, Graf Vitzthum and Mrs. Prell (before her marriage Dr. Koehler), all of Germany; Doctors Jaubert and Toumanoff, of France; Mr. Morland and Mr. Illingworth, of England; Doctors Morgenthaler and Leuenberger, of Switzerland; and Doctor Soudek, of Czechoslovakia. In addition there were present many others who are rendering valuable service to the cause of beekeeping but whose names are not yet so well known in this country. A few of these were Dr. (Miss) Beling and Dr. (Mrs.) Rosch, of Germany, Mrs. Rosch being the wife of Doctor Rosch, known for his work on the division of labor and now with Dr. Armbruster at Dahlem; Rev. Girtler, of Meran, Italy; Rev. Adamec, of Czechoslovakia; Mr. Neschunoff, of Russia; Mr. Grünup, of Latvia; Dr. Rasmussen, of Denmark; and Dr. Okorn, of Jugoslavia.

A Great Collection of Valuable Papers

During the four-day meeting over thirty papers were read in addition to time given to demonstrations, sight-seeing and other expeditions. The majority of the papers dealt with disease, although special descriptions of beekeeping in England, Denmark, Russia, Sweden and Latvia were given. In case of the last two countries instructive films were also presented.

One of the features of special interest to the writer was a film made by Dr. Beling, which shows the behavior of the honeybee during pollen-gathering. Dr. Beling recently received her doctor's degree for work done with Professor von Frisch at the University of Munich on the time sense of the honeybee, but is now with Dr. Armbruster at the Insitut für Bienenkunde. The film on pollen-gathering is a highly valuable contribution to our

knowledge of this phase of bee behavior since it shows clearly the whole process. Slow motion photography is used at times. One of the most interesting parts is that which depicts the transfer of the pollen to the pollen-basket while the bee is hovering on the wing. It is hoped that American beekeepers will soon have an opportunity to see this film.

Of special importance also were certain preparations for the microscope by Dr. (Mrs.) Rosch to show the length of life in various media of spermatozoa from the drone. One preparation, of particular interest, showed spermatozoa still alive and apparently normal at room temperature 24 hours after they had been removed from the drone. The question has sometimes been raised in connection with the Watson method for artificially inseminating queen bees as to how long the spermatozoa may live in the pipette and what effect temperature has. This work by Dr. Rosch seems to indicate that the spermatozoa under ordinary conditions can easily remain alive in the pipette long enough for the operation.

Another work of value to those interested in the anatomy of the honeybee and the acarine disease were certain cross-sections of the thorax, prepared by Dr. Freudenstein, through the fold overlapping the first spiracle. Within the vestibule in front of the spiracle formed by this fold he has found as many as six mites. Mites were also found on a queen bee in this protected area. Dr. Freudenstein believes that one of his preparations shows a larval form of the mite. His findings are of special importance in connection with any possible difference between *Acarapis externus* and *Acarapis internus*.

Miss Betts presented an interesting paper on her work with sugar syrup to determine the maximum load carried by the bee, time required, influence of temperature, and other factors. No attempt will be made here to give a resumé of all the numerous papers, each of interest, since these will probably be published in the Bee World, a periodical well worth the time for reading by everyone really interested in bees.

An Appropriate Meeting Place

Most of the meetings were held at the Institut für Bienenkunde, at Dahlem-Berlin, of which Dr. Armbruster is in charge. The walk leading from the street to the Institute was lined with the flags of all nations, that of the United States being the first on the left to greet visitors. The buildings of the Institute form a quadrangle and the meetings were held in the open inner court. Behind a long table in front for the chairman, secretary and others was a large insignia of the Apis Club. Quite appropriately for the occasion a speaker's desk was formed of four supers piled up, and at one side of it was a straw skep. Considerable time and space would be required to describe adequately the collections of hives from all over the world which Dr. Armbruster has installed at the Institute and also the garden maintained for various honey plants.

A large wreath in memory of the late Captain Morgan, at his death secretary of the club and editor of the Bee World, was unveiled on the first day beside the insignia behind the chairman's table following an eulogy by Mr. Baldensperger. At the same time Mr. Baldensperger made fitting reference to Dr. Maassen, the bee-disease expert, and to Mr. Wilhelm Wankler, the queen-breeder, both of Germany, as well as to Dr. Rennie, of Scotland, all three of whom died during the past year.

The remainder of the first day's program was given over entirely to the reading of papers and showing films. The program on this day began at 9 o'clock in the morning and, with the exception of intermissions of one hour and a half for dinner in the middle of the day and a few minutes for coffee late in the afternoon, was continued until 7:30 in the evening before adjourning for supper. Proof of the interest taken by those in attendance is shown by the fact that the crowd attending the meeting after coffee waited for the last speaker before leaving.

Sightseeing and Entertainment

On the forenoon of the second day a visit was made to the mammoth Ullsteinhaus printing establishment. This was followed by a sight-seeing trip in autobusses past various places of interest in the city. The trip included a visit to the Natural History Museum, where, among other exhibits, the famous Drory collection of bee books was shown to the beekeepers. A special honor was then received, a dinner given the Apis Club in the Rathaus by the city of Berlin. The city of Berlin was represented at the dinner, but more than that, the Minister of Agriculture for the whole Republic of Germany, Dr. Dietrich, was present in

person. The afternoon of this day was given over to more papers at the Institute at Dahlem. The third day was also given to papers, but in the evening seats were furnished in the City Opera House to witness a special performance being given there as part of the celebration of the founding of the republic which was going on at the time.

The last day of the meeting was devoted to an expedition which began with a boat-ride from Pichelsdorf in Berlin through the beautiful lake region which extends for several miles all within the city limits of Berlin, past Potsdam, and to a point on the Templiner See near which Dr. Armbruster lives during the summer. En route a stop was made to see a mating station maintained by the Institut für Bienenkunde. The boat finally docked near a cafe so located on the shore of the lake as to command a fine view. Dinner was waiting, and then expeditions to nearby points of beekeeping interest were made, including a trip to Dr. Armbruster's home where coffee was served at tables out-of-doors on the edge of the lake. At this time the last of the papers were read, after which there was music by a string quartet. Everyone then went back to the cafe near which we had landed, and supper was served.

At this final meal together appropriate talks were made expressing the appreciation of all to Dr. Armbruster and his associates for their work and trouble in arranging such an elaborate and never-to-be-forgotten round of hospitality, instruction and entertainment, as had been provided for the Apis Club during its stay in Berlin. Mr. Baldensperger was heartily applauded by all when on this occasion he stated that it is in such meetings as the one held by the Apis Club that the true seeds of international understanding and sympathy are sown. His remarks struck a responsive chord not only because the majority of the countries represented had borne arms in the recent conflict, but also because a number of the individuals present had been actively engaged. A glowing tribute was paid by Dr. Rasmussen, of Denmark, to the part now being played by young women in the field of beekeeping research and other beekeeping endeavors. In this connection the ladies named earlier in this article were mentioned specifically.

All too soon came the hour for the departure of the boat which was to carry the beekeepers back to Potsdam, from there to go their various ways home. The Baldenspergers were the guests of Dr. Armbruster and so remained behind with him. The last impression the writer has of the meeting is the radiant countenance of Dr. Armbruster and the smiling face of Mr. Baldensperger as the two stood together under the lights of the pier responding to the waving of handkerchiefs and the shouting of "Auf Wiedersehen," from those on the boat. The happiness of Doctor Armbruster at having engineered such a highly successful meeting was clearly evident while Mr. Baldensperger, who has done more than any other one man in recent years to foster international union and solidarity among beekeepers, seemed to be recollecting with pleasure this outstanding landmark among apicultural gatherings which had just been passed. The waving and the shouting continued until the little group on the pier was out of hearing and lost in darkness.

Without sufficient time for all on board to say goodbye to each other and to express the wish of meeting again at the next meeting of the Apis Club to be held in London in 1930, the boat arrived at Potsdam and the Berlin meeting was officially past history.

It was a matter of keen regret to the writer that he was the only beekeeper in attendance from the United States. Possibly the fear of language difficulties or expense deters some from attending the European meetings. As far as language is concerned, a large number of the continental bee investigators speak or are learning to speak English. For example, Dr. Morgenthaler, of Switzerland, did not venture to express himself in English when I visited his laboratory at Berne six years ago. This time I found him speaking English fluently. Many similar examples could be cited. For the London meeting, at any rate, the question of language difficulties is not a legitimate excuse. As far as expense and time are concerned, for those in the eastern part of the United States a trip to Europe can now be made at less expense and requires no more time than a trip by rail to the Pacific Coast of our own country. It is to be hoped, therefore, that several beekeepers from this country will see fit to be in London for the Apis Club gathering in 1930.

Washington, D. C.

Machine for Filling Honey Containers

Charles Mraz

A Simple Home-made Device Which Automatically Shuts Off Stream at Correct Weight

With the semi-automatic bottler to be described, we are saving much time and honey, and at the same time making a once tedious job a pleasant one. This machine is very simple and can be made by anyone at a small cost.

When we bottled honey by hand, it was not uncommon to have a case of twenty-four pound jars weigh a pound or two more than the exact weight required. No beekeeper can afford to sell seventeen ounces of honey to a pound. With this bottler, the weight need not go over as many ounces to the case. With honey hot, (140°-160°), we have filled jars at the rate of twenty to twenty-five a minute—just about as fast as a person can feed the jars. With five or ten pound tins, while one can is filling, the can previously filled can be sealed and put away without worrying about the honey running over. The flow of honey is stopped at the exact weight wanted in the can. All told, we are certainly pleased with the outfit.

The most important things needed to build this machine are: a balance scale with a flat platform; an electric door catch, such as is used in front doors mostly in apartment houses and city homes so that the locked front door can be opened from the outside by pressing a button within the house; and a honey bottle filler of the gooseneck type, preferably with a short neck.

The container to be filled is placed on the scale with weights properly adjusted. A press on the foot treadle opens the gate which is held open by the electric door catch arrangement. As the jar fills, its added weight of honey causes the beam of the scale to come up and make a contact, closing the circuit through the door catch. This causes it to trip, the tension of the spring in the bottle filler forcing the gate to close and stop the flow of honey. The contact is broken when the jar is taken off the scales. In actual operation, all this takes place in just about three seconds.

Other small things are needed, such as a pair of Ford coil points, a transformer to step down the house current to six volts, or a battery, for the door catch, an automobile coil condenser which can be secured in any garage, nine inches or so of brass rod ⅛" thick by ⅜" wide, and various bolts, wire, screws and such small things one usually has handy.

The Honey Filler Gate

First to be done is the installation of the honey filler gate. Ours is connected from the honey tank on the floor above, first through a rubber steam hose, then to a piece of 1½" brass pipe fastened to a metal plate made so it can be lowered or raised and made fast with a bolt to accommodate the various sized jars. This is to get the mouth of the filler close to the top of the bottle, for the shorter the distance, the more accurately will the machine operate, especially on small jars. At the end of the brass pipe is an elbow to which is screwed the honey gate. This arrangement is shown in Fig. 1. The tank does not need to be upstairs, though it is better and should be high enough to give a good force to the flow of honey.

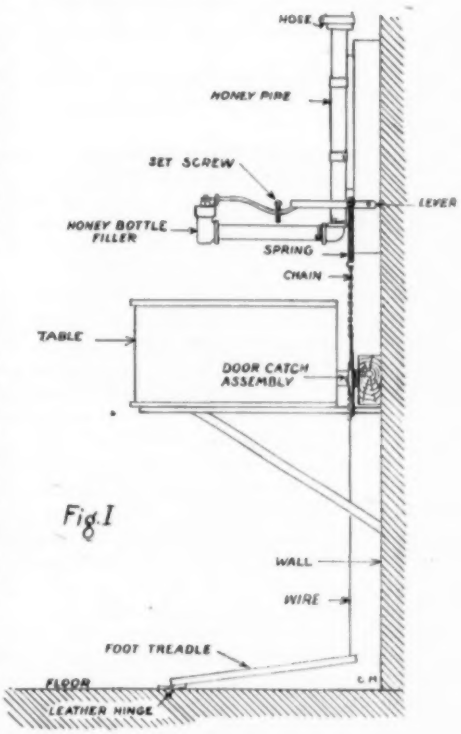


Fig. 1.—Diagram of a side view of bottle-filling apparatus.

Construction of the Filler Table

This is a two-deck affair, the lower level for the scales to rest upon and the top of the table flush with the platform of the scale. For this, a hole is cut through the table top the shape of the platform of the scale with about ¼" clearance all around. This facilitates easy and quick shifting of the empty and full jars from one side to the other. The top of the table should not be fastened down, but set on pins so the scale can be removed at will.

If containers to be filled are mostly large, a pound or more, or approximately of the same height, the distance between the platform and mouth of the filler can be fixed to fill the tallest container with no need of the rubber hose or arrangements for lowering and raising. For large containers, the distance between the top of the jar and the filler can be as much as two inches, but for small jars the distance should be close.

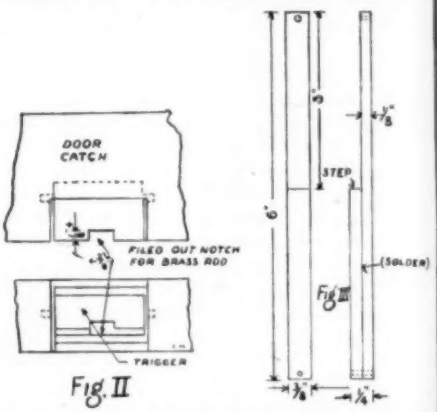
A long bolt should be threaded through the handle of the filler to regulate the opening of the gate if small jars are to be filled. A sheet-metal covered table top is well worth the making. It is easy to keep clean and jars slide on it easily when shifting them. A table of about two by four feet is a convenient size. It should be high enough to be convenient for one to operate the bottler either sitting or standing as one wishes.

The Door Catch Assembly

This is the heart of the whole machine. Starting from the top, a lever in the form of an "L" is needed which presses down on the honey gate handle to open it. An ordinary bracket such as used in supporting a shelf is good. One arm is cut down to about three inches and the other about seven inches long. The short arm of the "L" rests on top of the filler handle. The long arm is pivoted a distance of six inches or so back from the angle. A small hole is drilled through the long arm about two inches in front of its pivot. At this point a coiled spring ⅜" or so in diameter and about six inches long, is fastened at one end, the spring projecting downward. The whole assembly is shown in Fig. 1.

The purpose of this spring is to furnish a "give" to the connection between the lever and the door catch, so that the filler handle bears against the horizontal pipe of the filler every time when open. The honey gate must open the same amount for any set adjustment for accurate filling. After the flow of honey is cut off, there is a certain amount of drip or lag that does not reach the bottle until after the machine has tripped, and the secret of accurate filling is to have the amount of drip or lag the same each time.

The door catch is fastened about 12" below the end of the spring in a plumb vertical line from the point where it is fastened to the lever, leaving room for adjustable connection to the spring with a piece of chain. A brass rod is made as shown in Fig. 3. A 3" piece of ⅛" by ⅜" brass is soldered firmly to a 6" piece of the same material. A small hole is drilled at each end for the wire and chain to be fastened.



Figs. 2 and 3.—The notch in the trigger of the door catch (Fig. 2) fits over the single portion of the brass rod (Fig. 3) when catch is closed and jar is filling.

Next, file a notch in the "trigger" of the catch as shown in Fig. II, a little more than ⅛" deep and a little more than ⅜" wide so that the upper or thinner part of the brass rod will slide easily within it.

A guide plate is made for the rod as in Fig. IV. This is made of rather heavy galvanized sheet iron and so that the

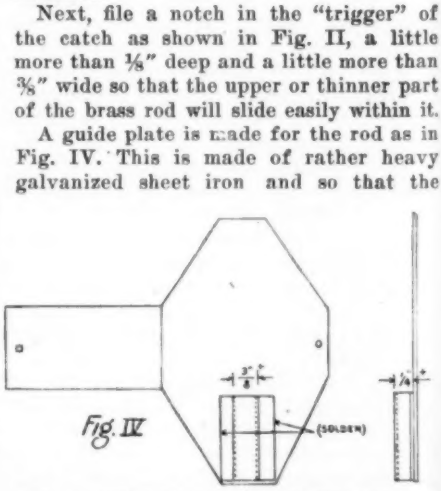


Fig. 4.—Guide plate for the sliding brass rod. See also Fig. 5.

lower or larger part of the brass rod will slide easily within the guide. Complete assembly of the door catch is shown in Fig. V.

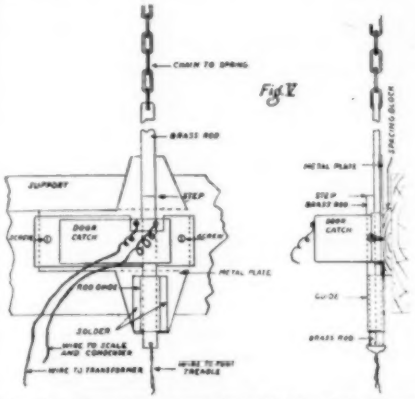


Fig. 5.—Complete assembly of door catch. Front view at left and side view at right.

The door catch is fastened so the trigger when released by the electricity will open upward. The guide plate is placed first on the support and the catch upon it. Slip the brass rod through the guide and up through the notch in the trigger, the thinner end up and the step of the rod towards the catch. Have the guide plate and brass rod lined up straight through the notch, then drill through the plate through the holes on the ends of the catch. Screw or bolt both fast to the support provided.

Fasten a piece of chain to the upper hole of the brass rod and to the spring. Leave some extra until after the machine is all set up. Through the lower hole of the brass rod, a long wire is fastened, extending down to the treadle on the floor. This also is shown in Fig. 1. Leave extra length for adjustment. The treadle is just a piece of board about twenty-four or more inches long by four inches wide and one inch thick. The end towards the operator is hinged to the floor with a piece of leather and an eye is screwed on the rear upper end, directly below the brass rod, for fastening the wire from the catch.

Contact Points for Scale Beam

A pair of Ford points are next installed. See Fig. VI. Cut off the tungsten point with a small piece of the brass from the point assembly made entirely of brass, and solder this firmly, with the point up, to the highest point on the end of the scale beam. The point assembly that is made of spring steel is left intact. This is fastened beneath the top of the table, above the point soldered on the scale beam. A block of wood is fastened beneath the top of the table of the proper thickness to make a gap between the points of about ¼". The point assembly is screwed to the block through holes already in it and extending out so that the points meet squarely and the spring is

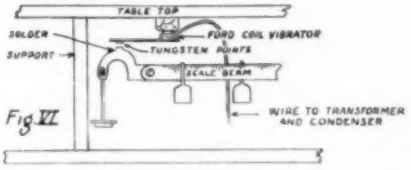
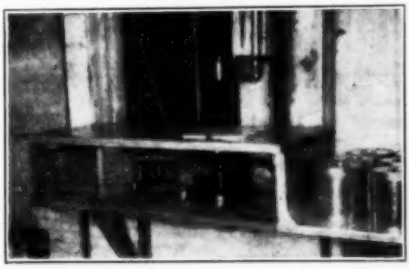


Fig. 6.—Tungsten points make contact when scale beam rises as jar is filled.

free to bend. A support is erected near the points between the lower level and table top to prevent any sagging of the top when heavy with jars of honey. Sagging of the top would cause the points to come closer together with the result that the jars would fill lighter.

Wiring the Apparatus

From the transformer output, one wire goes directly to one post on the door catch and the other is connected to the spring contact point assembly below the table



Arrangement of the filling table and the automatic filler.

top. Fasten an old battery post to the base of the scales and run this wire to the other post on the door catch. The condenser is connected across the contact points. This prevents the points from burning as they are apt to do without it, causing poor contact and trouble. One wire from the condenser goes to the binding post of the transformer which is wired to the point on the table top. If there is only one wire on the condenser, solder another wire to its metal case and

connect this to the binding post at the base of the scales. Keep points clean at all times and file them a bit occasionally to make sure they stay clean.

On the foot treadle, fasten the wire to the eye so that the treadle is an inch or so off the floor, with the step of the brass rod just below the trigger in the catch. Adjust the chain between the spring on the lever to the brass rod so that the honey gate will open all the way when the step of the rod is bearing up against the trigger. It is important not to have the step bear too hard against the trigger or it will not release instantly. Still, the tension should be strong enough to open the gate fully and give a small rebound when released, as this also helps the gate close quickly.

It is important that the honey gate works freely and easily. Don't have the bushing nut screwed down too tight. Shift the scales if necessary so the contact points come together squarely.

Drop some light grade oil on the brass rod where there is friction through the guide plate and door catch and anywhere there are metal parts rubbing together. Press down on the platform scale with the hand to see if the catch releases instantly and buzzes if AC current is used. Press down on the treadle and make contact again to see if the honey gate will shut quickly and smoothly. All moving parts must work freely and easily at all times. Any signs of sticking or binding must be remedied. If all works properly, try the machine with the honey going. The honey should be hot, 150° to 160°. On another scale make allowance for weight of the container to be filled. Adjust weights on the bottling scale just under, at first, the honey capacity of the container. Press the treadle and let the jar fill and shut off by itself. Fill several containers to see if all are filled the same. If honey is cold in the pipe at first, it will fill heavier as the honey gets hotter until the temperature remains the same.

If the machine performs as it should, weigh on the other scales the amount of honey filled in the container. For what weight there is lacking, add that much weight on the bottling scales. The scales usually are not graduated fine enough and we compensate any slight difference in the weight of the filled jars by adding small weights, such as a nail or two, on the weight holder at the end of the scale beam of the bottling scales. For small jars it may be best to screw down on the set screw in the handle of the filler so the honey does not run out in too large a stream.

Check up on the check scales to see if containers are being filled accurately. If not, add or take off weight on the bottling scale until the machine fills the correct amount. If the jars fill unevenly, sticking or binding of some part is usually the cause. With the machine well oiled all around and adjusted properly as to spring tension, weights, etc., every jar can be filled with scarcely any variation from the exact weight.

Middlebury, Vt.

Soy Bean as a Honey Plant

John H. Lovell

Does the Rapidly Increasing Acreage Mean the Production of More Honey?

Next to rice the soy or soya bean is the most important food plant of the vast empire of China, and in the future it will become one of the chief food resources of both Europe and America. One of the most remarkable events in the history of modern agriculture is the rise of the soy bean to commercial importance. According to the census of 1910 there were planted in the United States only 1629 acres of this bean, but seven years later the area had increased to over half a million acres. Its possibilities have not yet begun to be recognized.

In China the soy bean was cultivated more than 5000 years ago. Here it is used both for human and animal food and surpasses the pea in value. It is planted everywhere—in fields alone and as an undercrop with corn and sorghum. A multitude of palatable foods are manufactured from it and it is eaten at every meal by rich and poor alike. The beans contain only a slight trace of hydrocarbons, but are rich in edible oil and proteins and can thus serve as a substitute for eggs and meat. When eaten with rice or potatoes they form a well-balanced ration at a very moderate cost.

Belongs to Same Family as Clovers

The soy bean, *Glycine hispida*, belongs to the same family as the pea, bean and clovers, plants which produce their seeds in a legume or pod. It is an annual bushy plant, two to four feet tall, with somewhat climbing stems, bearing trifoliate leaves, with two or three pods in their axils. The 500 or more distinct varieties differ chiefly in the size and color of their seeds, which may be green, yellow, brown, or black. In America it is grown mostly in the eastern central states, being supplanted by red clover in the North and by cowpea in the Gulf states. Up to the present time it has been cultivated chiefly as a hay or forage crop; but, with our population increasing twenty times faster than the food production, it must soon become important as a food for the human race.

Soy beans, before they have fully ripened, may be shelled and used as a green vegetable like green peas. A few hills might well be planted in every garden. They may also be canned and used in winter, or they may be sprouted and the sprouts used like asparagus tips, to which, however, they are much inferior. The dried beans when cooked also make a palatable dish, and more than 100,000 bushels are packed annually by American canning factories. As the seeds are used as a substitute for coffee, soy bean is often called coffee berry.

In Manchuria the soy bean has been grown almost solely for oil and the press cakes. The oil is employed in the manufacture of butter and soap, and is also in demand for varnishes and paints. When the oil is treated with hydrogen it loses its objectionable odor and color and solidifies into a pearly white fat, which has a high food value and makes an excellent shortening. From the cake which is left after the oil has been extracted, a flour can be made which can be successfully used for bread, pastry and vermicelli. It is likewise valuable as a cattle feed. In all parts of China the cake is employed in immense quantities as an agricultural fertilizer.

By boiling the crushed beans in water a vegetable milk may be obtained, which may be used in making cakes and custards. Its properties are very similar to those of cow's milk as a substitute for which it is very extensively used in China. From the milk a curd or cheese is prepared, which is on sale in the Chinese markets of America. This may be flavored with fruits and jams and made into puddings, and used for sandwiches and luncheon novelties.

But of all the preparations made from the soy bean, none is more widely distributed or better known than soy sauce, a dark brown liquid which in odor and taste resembles a good meat extract. In Japan alone the annual production is more than 2,000,000 barrels. While it is largely consumed by the Chinese and Japanese it has been introduced into both

Soy bean, stems, leaves and blossoms.

Europe and America and may be purchased at all Chinese markets. It is possible in this article to consider only very briefly a few of the food products which are derived from soy bean. Its high percentage of proteids and the great variety of preparations which can be made from it, as well as its low cost, will undoubtedly cause it in the coming years to be more generally used throughout the United States. Even if it furnishes no nectar to the bees, it will be most valuable to the beekeeper as a source of food for himself and his family.

Conflicting Evidence as to Yielding Nectar

The large area of land devoted to the culture of the soy bean in Asia, Europe and America, and the strong probability that this acreage will be greatly increased make it desirable to inquire whether this legume is a good honey plant or not. A

number of beekeepers in various parts of the South, more particularly in North Carolina and Tennessee, in each of which states there is more than 100,000 acres under cultivation, have reported that their bees at times work diligently upon the plants. An average of 50 pounds of honey per colony has been reported, and in special cases an even larger amount. In some localities the bees are said to work from morning until night on the plants, but in others only during the first half of the day. Various pecularities in the honey flow have also been reported, as that the yield is not regular every day, or that while the bees visited the fields daily no surplus was stored, or that bees are never seen on the plants when grown in cornfields.

As the result of his inquiries Pellett states that the reports from different sections are very conflicting, and that under certain conditions bees do not seem to find soy bean attractive. He adds that he has never found bees at work on the plants in Illinois during the time of his limited observation. As some 30,000 acres of soy beans were grown in Illinois at the time of the last census, it would seem probable that he would have heard of reports of a surplus, if it yielded much nectar in that state.

In view of the great acreage of soy bean in the United States, and its universal cultivation in China, if it is a reliable source of nectar this should have been established long ago. But the reports of a honey surplus from it are very few and do not agree. Apparently no critical observations have been made as to whether the bees visit the bloom or the foliage. The reports are not similar to those received in regard to well-known honey plants, like the clovers; but, correspond to those received concerning plants which furnish only honeydew.

The plants of soy bean grown in my garden, had small inconspicuous flowers, with the corolla hardly visible. They were odorless and apparently nectarless and wholly unattractive to bees. Plants under glass from which all insects were excluded formed pods in great abundance which were well filled with large seeds. The soy bean is self-fertile and not dependent on bees for pollination.

The flowers, the young leaves, and the stems are densely hairy as can be seen in the illustration, but the older leaves are smoother. The specific name *hispida* was evidently selected because of the roughness of the stems. But this coating of hairs is not sufficient to defend the plants from insect attack. In 1925 in the southern counties of South Carolina there was a severe outbreak of leaf-devouring caterpillars, and fields of soy bean suffered from the velvetbean caterpillar, fall army worm, corn ear worm, and the grass worm. In 1925 in southwestern Louisiana blister beetles *(Epicauta)* attacked in large numbers the soy bean fields. The soy bean is clearly open to destructive insect depredations. As is well known plant lice often infest fields of alfalfa in overwhelming numbers, as, for example, in 1921 they destroyed in Kansas alone 100,000 acres of this plant, a member of the same family as soy bean. It is highly probable that plant lice in certain localities and under certain conditions infest also soy bean.

May Have Been Honeydew

If it is honeydew which is stored by the bees from soy bean, then the erratic, scattering and infrequent reports of honey flows would be fully explained. The description of the supposed honey as amber-colored with a peculiar flavor would also apply well to honeydew. Many species of the legume family do not secrete any nectar, while others produce it very sparingly. Therefore without far more reliable evidence than is at present available, the writer does not think that soy bean should be ranked as a honey plant.

It will perhaps be urged that the beekeepers who have reported a surplus of honey from soy bean could not have been mistaken. But it will be remembered a few years ago that many beekeepers, both in the bee journals and at beekeepers' meetings, insisted that their bees gathered a surplus of honey from Indian corn or maize. They refused in some instances to be convinced that they were mistaken. Yet corn never has at any time or at any place yielded a drop of nectar. Its ecology and paleontological history makes this certain. But it is everywhere, sometimes in overwhelming numbers, infested by two species of plant-lice, as well as by a small leaf-hopper, which cover all parts of it with honeydew. It is honeydew, not honey, which bees store from corn. Many other nectarless plants have been reported also in the past to yield large quantities of honey. The reader will find this subject discussed at length in the chapter on honeydew in "The Honey Plants of North America."

Waldboro, Maine.

From the Field of Experience

SCOTTISH BEEKEEPING

American Visitors Pay Fancy Prices for Scotch Heather Honey

While North American beekeepers have to contend with brood disease, and find difficulty in marketing their product at a remunerative figure, in North Britain our problems are entirely different. Foul brood is practically unknown, while our chief difficulty is in producing enough honey to meet the demand, American visitors being known to pay five shillings the pound for Scottish heather honey in the comb.

With honey seldom under two shillings, the food-chamber wintering method does not appeal to us. We find that black bees can winter quite well on 30 pounds of stores, build up to fill ten British standard frames with brood and give us 120 completed sections if the season is at all favorable.

Italian bees do very well in a hot dry season, but our Scottish summers are seldom of this description and bees more suited to the climate are necessary.

After extended trials of various Italian, Dutch, Swiss and Carniolan strains the ideal bee has been found in a district of central France known as "Le Gatinais."

Strangely enough this strain is confined to one district, the bees of both northern and southern France being entirely different and inferior in every way to "Le Gatinais" bees. No possible fault can be found with this particular strain after several season's trial in Scotland. They are hardy bees, good tempered, little inclined to swarm, and if less prolific than Italians, produce more and better comb honey per colony.

My apiary is near the Gretna Green smithy of romantic marriage fame, which attracts many Americans with other visitors and beekeepers among them are welcome to call and see our bees at work bringing in both English and Scottish honey. We are quite on the border and our bees forage in both countries at will.

Mr. Lathrop, of Bridgeport, Wisconsin, when here, considered the Gretna white clover among the best he had seen, and our chief need is warm sunny weather to induce a good flow of nectar.—J. M. Ellis, Gretna Green, Scotland.

STRIVING FOR EXCELLENCE

Rewards That Come to Those Who Fail to Take First Prize

To them who by patient continuance in well doing seek for glory and honor and immortality.—Rom. 2:7.

But glory, honor and peace to every man that worketh good.—Rom. 2:10.

For there is no respect of persons with God.—Rom. 2:11.

The fall of the year brings on the state, county and local fairs. Many of them will have passed into history by the time this article appears in print. But the time following an event often has as much of meditative value as that which immediately precedes it. It is a good thing to take an invoice of one's own accomplishments, and put one's self to a rigid examination as to why he did or did not take the first prize, or come within the honorable-mention class.

While visiting our own state fair recently I found that 200 feet of valuable and conspicuous space had been allotted to the exhibition of honey and to the Division of Entomology. Knowing, as I did, the high value of concessions at these great state occasions, I could not but realize that, after all, apiculture occupies an exalted position among the industries of the state.

And here in a splendid array, row upon row, in glass jars and tin containers, in sections of individual size and pound proportions, in frames for extracting and in chunks overpoured with liquid of gold, was an abundance of nature's most delicious sweet all ready for the critical judges to determine which excelled the other.

And who was equal for these things? Who could determine which really excelled? Yet ere the fair was over some one would receive the blue ribbon, and some would receive other evidences of excellence. What makes the difference? Did not the man who lost work as hard as he who won? Was there respect of persons with the judges? I think not. Evidently there was some little point, unnoticeable to the casual observer, which determined the placing of the ribbons.

And this close contest runs through all the affairs of life. Recently I had the honor of a place upon the rostrum with

Bernard Sturgis, of Butler, Ind. The great crowd had gathered to do him honor. It was publicly announced that the difference between the place that Bernard occupied in the Thomas A. Edison national contest to find Mr. Edison's successor as the world wizard in the electrical field and the one who occupied first place was only a matter of two-tenths of one percent. How difficult must have been the task of judging in a contest where it would seem that the destiny of 49 select youths of America was at stake! Yet a decision must be made. And so it is often in the judging of any accomplishment, the points of excellence often vary so slightly that it is hard to tell which is better.

I believe that in the race for excellence there is no respect of persons. Fanny Crosby was blind from her youth, and yet she sang, "Visions of rapture now burst on my sight." Helen Keller would not despair though badly handicapped by nature. I knew a man once who was badly afflicted as a stutterer, and at 21 could neither read nor write. But "by patient continuance in well doing," came to move multitudes by his eloquence. Whatever we have failed to accomplish this past year in the production of the best in our line of endeavor, we can at least be assured that "glory, honor and peace will come to every man that worketh good." —Rev. J. R. Stelle, Butler, Ind.

BEEKEEPING IN GREECE

Grecian Government Sends Representative to America to Study Beekeeping

A representative from the Grecian government, in the person of John Hadjinisclaou, called at the "Home of the Honey Bees" recently. He has kept bees in his home country, graduated from the Agricultural College at Athens, and is now studying at Rutgers University, New Brunswick, N. J. He showed that he knew the habits of bees and that he was already familiar with American equipment. He is specializing in entomology, and when he gets his M. S. degree next June, he will go back to his native land to teach economic entomology and beekeeping.

He may, before he goes back, take up a short course in beekeeping at Cornell University under Dr. Phillips and he may also take some work under Prof. Wilson at the University of Wisconsin. If he does, he will be exceptionally well-equipped to teach modern apiculture as it is known in America.

Before coming here, he had as many as 100 colonies which he ran for honey. It is evident that his interest in bees in the first place induced him to pursue his studies still further in the larger field of entomology.

John Hadjinisclaou (left) and E. R. Root.

There is, he says, an exceptional opportunity for the keeping of bees in that marvelous fruit country of his because the flora is abundant and fine. Already there are some beekeepers in Greece who have as many as 1000 colonies. Beekeeping there, he says, for the most part is in its primitive stages. But primitive as it is, Grecian honey in pretty little stone jars brings almost fabulous prices in New York City.

When modern bee culture is finally introduced in this little country with its wonderful history and its early civilization that came near if it did not quite surpass the civilization elsewhere of the then known world, it ought to become a land flowing with milk and honey.

We in America wish Mr. Hadjinisclaou success in helping to kill off the fruit insects, and at the same time develop those that are useful like bees. We asked Mr. Hadjinisclaou to stand for his picture and here he is along with the writer. His permanent address in Greece after June 30 next will be at Phytopathological Institute, Kiphissia, Greece.—E. R. Root.

HAPPENINGS ABOUT THE APIARY

Jay Smith Mixes With Angry Bees—So Does the Cow and Chicken

Some funny things happen about the apiary and some things that happen are not funny a single bit. Troy Jones and I were putting up some package bees in an apiary on the Ohio River. We came to a colony of cross hybrids that was very strong in bees. On top of the hive was a shade board. As we removed this board a mouse jumped down and ran into the entrance of the hive. We both either said or thought in chorus, "Now we will see some fun." In less than a jiffy out came the mouse completely covered with bees. We were so interested that we got down close to the entrance, one on each side. The bees poured out of the hive like a swarm, half coming my way and half going after Jones. We beat a retreat, but both of us were covered with bees. Yes, we saw some fun all right. The worst of it was that that colony did not get over that mouse attack all day and whenever we came in sight the onslaught was renewed.

The Tale of a Cow.—I have a registered Jersey cow and true to her type she has a black switch. One day she was grazing among the mating hives which are about three feet above ground. The bees of a mating hive were clustered out enjoying the cool of the evening when along came the Jersey, switching flies as cows will. Well, when she got up to that mating hive, swat went that black switch right in that cluster of bees. Honestly, I never before knew that that cow had such a quick getaway. She will not go near a hive any more, and if she sees only a hive cover on the ground she gives it at least ten feet margin of safety.

The Sun-burnt Chicken.—One of the children's bantam hens stole her nest and attempted to hatch 22 eggs. She could cover only about 15 at a time so seven would get cold. Then these seven would be brought into the nest and another seven would get cold. But it seems that one of those eggs was a Presbyterian and what was to be simply was to be. It was preordained that one should hatch. So it did, and it was promptly named "I'm Alone."

One day "I'm Alone" was scratching for anything it could find out in the apiary. It was a little chick with few feathers and as a result the whole back part was sun-burnt so it had that schoolgirl complexion. It carried on its scratching operations in front of a strong colony where the bees covered the entire front of the hive. Finally "I'm Alone" turned its back toward those bees and gave a vigorous scratch, throwing dirt and gravel among them. That chick went into the air making a pretty take-off and yelling "peep! peep!" As it went by other hives more bees joined the chase and I could tell every time a bee caught up with it for the "cheep! cheeps!" would come faster. It spent the next hour under the shade of a tree picking out stings, all the time keeping up a mournful peeping.

Later "I'm Alone" went back into the apiary but confined its operations more to the rear of the hives.

The Absconding Swarm.—One day I threw a piece of comb about an inch square on top of the metal cover of a winter packing case. A small absconding swarm about as big as a blow-gun came along and located that piece of comb. The bees probably thought that was a funny place for a colony to make its home but there was the comb as proof. If other bees had made their home there, so could this little swarm. So they settled down on top of the metal roof. It was in the evening and it was cool there. They fastened the comb down and prepared to stay.

Next day the sun came out hot and the comb melted and ran over the metal roof leaving a spot about six inches across. But the bees would not be bluffed. They all stood on their toes and fanned their wings trying to get that wax back to normal. When night came on, the wax cooled and the bees roughed it up so it was not so slippery for them to walk on. Next day it melted and they fanned, then at night they whitened and roughened the wax again. They kept this up for nearly a week when at last the idea seemed to grip them that, after all, that was not a desirable location for a home and they left.—Jay Smith, Vincennes, Ind.

BEEKEEPING IN NORTH DAKOTA

Management Peculiar to Northern Portion of the Sweet Clover Region

The problems of the beekeeper in North Dakota are many and varied. In August he must begin to prepare his bees for winter if he expects to get a profit the next year. He must requeen his colonies and see that there is an adequate amount of bees for the winter cluster. In September or the first half of October we

feed our bees. This process is the same as in the South.

The winter packing must be sufficient for the severe cold weather. Our winters vary. At times the mercury drops to 39° or 40° below zero. Therefore the packing must be sufficient. It must be at least ten inches in a protected location. We can not depend on snow for additional protection.

As soon as the extracting season is over, we start to get ready for the next season. Everything must be ready for the rush season. Spring opens any time after March 25 to April 23, which is very trying on bees. We expect spring about the first of April, at which time the hives are opened to ascertain the condition of the colonies and how much feed will be required. If enough feed was left in the fall they do not require much. About April 15 we expect the first pollen from the pasque, or as it is sometimes called the May flower. It is not a nectar source. Although some nectar is gathered it is consumed about as fast as gathered.

Our main source of nectar is sweet clover which begins to bloom in July and continues until the late heavy frosts in October kill the bloom. The rains are not too plentiful during the later part of the summer, although the early spring and summer is oversupplied with cold winds and rains when one wishes to see open sky again.

Two of my colonies produced 250 pounds of fancy sweet clover extracted honey each. I would not say this is an average, but a good example of what can be done. The fact that beekeeping is an important industry in this section can be attested by the fact that in 1920 beekeeping was an experiment and in 1928 there were over 35,000 colonies in the state.—James Baltrusch, Bowden, N. Dak.

A Beekeeper Told It

What a Man Did, What a Turkey Did

Morley Pettit tells this one (or two):

"Two pictures stand out vividly in my memory—one of a man, one of a gobbler—and both temporarily in the bee business. At the time I was working an apiary that was particularly cross. It was located in an orchard in which cattle were pastured at night, thus disturbing them, and they were hybrids too. I had the hives placed in rows, the rows faced in alternate directions, so that there was a sort of 'safety zone' between the rows that had the backs of the hives toward each other. The rows between the hives that faced each other were sure hot alleys. I was working one forenoon in this apiary when I chanced to look up and saw a stranger strolling serenely down one of these same hot alleys. I shouted warning to him, but he called back that bees never stung him and never would. He was just plain cocky about it. The next instant that gentleman seemed to change his mind about everything. A few quick swings, jabs, undercuts and uppercuts, and he was off to a flying start. He seemed to have forgotten about having any business whatever with me. 'Nor spake he a word and asked not to stay.' As far as I could watch him he was getting up more and more speed, going into higher and higher gear. He may be running yet. Who he was or what he wanted, I never learned. But he surely acted queer for a man that the bees never bothered.

"The turkey gobbler got his in the same apiary and reacted very similarly to the same stimulus. He was a big one, and one of that mean kind that wanted to peck and charge at almost everything and everybody. Red would drive him 'clean off his nut,' as the boys say. Children couldn't be allowed near him. He was bossing everything in sight, all the time. One day I was working in the same apiary referred to above, when Thomas Gobbler decided that the premises weren't big enough for both him and me. He advanced on me uttering an occasional terrible gobble, his war feathers spread and whole head red as fire. Reaching me, he tried to peck and 'kick,' following me every step. I finally got a hive between him and me and then worked around until he was in front of the entrance and I was behind it. When the range was just right I gave the hive a kick. You never have seen a gobbler change his mind quicker. His war feathers came down, he stuck his head and neck straight out ahead and lost interest in everything except a complete change of scenery. It was a real 'turkey trot.' The last I saw of him he was ducking under the barn, all turkey speed records for heavy Toms tucked in his pocket."

Siftings

J. E. Crane

Mr. Editor brings good news to beekeepers in the first two short editorials in the September issue. Dr. Wiley's new book must prove a great help in combatting the efforts of the corn sugar people to break down the pure food law. We have much to be thankful for in the help that various organizations are giving us in their opposition to the corn sugar crowd.

On page 567 the Editor calls our attention to a most important matter that has been too often overlooked — rearing queens for comb-honey production. Careful honey producers can not help but observe the great difference in the finish of the combs from different hives. Some colonies seem able to produce wax much more readily than others.

The suggestion of the Editor to mark each super with the number of the hive from which it was taken and then rearing queens from those producing the finest combs is a most excellent one. We have practiced marking our supers in this way for many years. I have found some queens scarcely worth a pinch of salt for the production of comb honey.

Another article from Dr. E. F. Phillips on honey appears in the September number. These articles have contained so much that is new and valuable that I have found myself wishing that when finished they might be published in book form, as they cover a subject that is of special interest to beekeepers. Such a book would fill a gap in our beekeeping literature that should be filled.

In his article on North Carolina beekeepers, pages 573-575, H. H. Root tells of the value of the tulip poplar as a source of honey. The same trees here in the North seem to yield no honey. A near neighbor has on her grounds a large tree of this species that blooms quite freely, but I have never yet found a bee at work on the blossoms.

The article by E. R. Root, beginning on page 568, is most interesting and would seem to mark a new epoch in the use of honey. Most people are fond of sweets, and it is no small pleasure to know that in honey and honey candy we have a sweet behind which there is no ill health or disease lurking to do us harm. Not only is this non-sticky honey candy a long-sought acquisition, but it will help to advertise honey in a sweet and fascinating way. E. R. Root seems to have a wonderful way of discovering new ways for using honey.

"Selling Honey at the Roadside" is the title of an interesting article by M. J. Deyell, beginning on page 577. It should be read by every person who attempts to sell honey in this way. He not only tells us of the legitimate methods of selling honey but also of the tricks of the trade. I don't believe much in tricks but a balloon in honey seems a very innocent one and while it amuses, it makes the mouth of the prospective buyer water at the same time.

I have a near neighbor who raises several acres of strawberries. He is a genuine Yankee so is not content to raise just one crop in a year; but raises two crops in a season, the first to ripen in late June and early July, and then another to ripen from August to November. Recently there was great excitement in the neighborhood when it was found the bees were working freely on his late ripening strawberries. On a careful examination as to the cause, it was found that grasshoppers were the real culprits. They first eat into the fruit, then the bees finish the job.

In traveling several hundred miles recently by automobile I saw but one field of buckwheat. Thus we have a poor show for late honey here, but we hope for sweet clover some time in the future. Some dairy men recently visited our State Experiment Station and found a sweet clover pasture of seven acres seeded last year that has carried approximately twenty cows up to the last of July. Another fifteen-acre field, which was seeded to sweet clover May 1 this year, has provided pasture for approximately thirty-five cows since the first of August, and the clover at this time is more than a foot high. Vermont is a dairy state and when the dairymen take to sweet clover our late honey sources are likely to improve.

Ignorance and self conceit are great drawbacks to human happiness and welfare. This is well illustrated in Rev. J. R. Stelle's amusing description of an inspector's experience. See pages 581 and 582.

From North, East, West and South

Southern California

Here we are at our mountain cabin again. Copious thunder showers in this section have kept the grass and ferns growing all summer so the country is very beautiful. Something like five inches of rain has fallen in this locality during the summer. This is fully five times as much as during any summer in the past four or five years. Ten miles below in the valley not enough to lay the dust has fallen. At the same time the weather in the valleys has been unusually warm. Old settlers say that these two conditions are a good omen predicting a good rainfall for next winter. Let us hope that their prophecy comes true.

In articles of former years I have mentioned the wild honeybees living in the woods about here. There is a fellow cutting wood near our cabin. He is one of those men who have a fund of experience in the great out-of-doors. I remarked to him that I had seen bees around here often but had not taken the time to hunt any of their abiding places. He said that I might as well save myself the trouble, that he had cut some twenty-five or thirty bee trees around here during the past fifteen years and at no time did he get five pounds of honey. How long does a colony live up here and does a small cluster of bees exist for a long time on a scant amount of honey? Some of our good authorities advise us to winter good nuclei and build them up in the spring. May be this is what these wild bees are doing.

A Little Honey Dissolved in a Glass of Warm Water Taken Before Breakfast Supplies Quick Energy and Helps to Start the Day Right.

I was visiting with an attorney friend of mine who has a cabin near ours. Together with his family he had just returned from a trip to the lake region of Minnesota. During their stay there they heard a public speaker, talking on good health, say: "In the morning when you first get up and before breakfast, try taking a spoonful of honey in a glass of warm water. It will give you as much kick and a lot more energy than the toddy so many used to think did them so much good." It seems to me this is a capitol idea and a good way to enlarge the uses of honey. Many people want their children to drink a glass of water the first thing in the morning and this is a good way to make them like it and at the same time do them a lot of good.

Considerable honey has been sent to Germany again this year. From ten to eleven and a half cents has been paid for orange and ten and a half for sage, while the darker honey has brought from eight to nine and a half cents. And buyers are not so particular as when a big crop is produced.

The meeting of the California State Beekeepers' Association will be held at San Diego, December 11, 12 and 13. Come and have a good time with us. We should have at least two hundred. It has been estimated that there are four hundred thousand colonies of bees in California. Certainly the owners of this amount of property should get out a good attendance once a year. Let's go and have the biggest meeting ever.—L. L. Andrews, Corona, Calif.

Northern California

Colonies in proper condition have taken advantage of a season ideal for the star thistle honey flow. Unfortunately early season conditions did not forecast such a season and consequently many colonies were not in shape. The average surplus is estimated between 50 and 60 pounds. Conditions of both bees and honey plants have improved in the San Joaquin Valley, with alfalfa, cotton and blue curl yielding. Cotton flows are, however, reported as more spotted than usual. In counties south of the Bay, where spring losses were excessive, sage gave an average surplus of about 60 pounds. Reported prices average: Alfalfa, 7¼ cents per pound; star thistle, 8¼ cents per pound.

A Jar of Sage Honey on Each Table at a Popular Resort Opens the Way for the Sale of Many Tons of this Delicious Sweet.

"It pays to advertise." A trip into the Big Sur country illustrated this axiom. At Phiffers Resort, where sportsmen come to fish and hunt, a jar of sage honey

is found on each table, while at the dining room exit a stock of honey is for sale. Tasting this honey at the table has made many enthusiastic customers of this buying class and opened an outlet for many tons of honey. The originator of this idea, Mr. Brown of the Monterey Honey Company, was painting a sign on his spare tire cover, "Honey for Health," above his company's trade mark. Beekeepers of the United States are wasting hundreds of thousands of dollars worth of advertising space of this valuable type each year. An attractive tire cover can be prepared for about $5.00.

Triphon Bros., Solano County, distributed leaflets at their State Fair booth, entitled "The Most Useful of All Insects—Bees," "The Most Healthful of All Sweets—Honey." The makeup of this leaflet is along modern advertising lines and equal to any put out by other industries. Their Italian queen took first prize. This leaflet states that they shipped 12,000,000 bees and 1200 queens last spring and gives many facts about bees and honey that will interest the public.

Since February the Department of Agriculture has been broadcasting a weekly program at 6:10 Tuesdays on bees and honey over KQW, San Jose. Mr. Hengy, president of the State Beekeepers' Association, and many others interested in the industry, have taken part.

Beekeepers are already getting the fever to attend the San Diego convention of the State Association, December 11-13. This will be a great convention, according to plans which are maturing.—Frank E. Todd, Sacramento, Calif.

Arizona We have had fine general rains throughout Arizona this summer. The high elevations report twenty inches of rain during July and August, though there has been only about half that amount in the lower elevations. These rains have put the honey plants in fine condition.

While we had a very poor honey flow this season, the bees at present are above average as to strength and stores. The bees here locally are short of stores, but, with the great profusion of wild flowers now starting to bloom, I feel sure they will gather sufficient stores for winter. Some of these plants bloom until November or until the frost kills the blossom. The mesquite bloomed a second time, due to good rains. But it does not produce as much nectar the second time as the first. I find this true generally.

Foul brood was found again in another section of Arizona. I am told that, when this disease is found, the inspectors go at night to the apiary where they have a large pit prepared beforehand. In this pit the colonies which have foul brood are carried and stacked. They are then saturated with gasoline and set afire. On most occasions the fire is prepared first and the colonies pitched in so no bees escape.

It seems to be the experience of most inspectors that where individuals try to destroy the disease they spread it instead. I have never seen a case of foul brood and hope I never will. There is such a little of it in Arizona it is perhaps best to burn it instead of treating as they do in some places. I failed to state that the pits were covered with earth before the bees start flying the next morning. In this way the disease is destroyed for good. Expensive, yes, but perhaps cheapest in the long run.—L. Wedgworth, Oracle, Ariz.

Utah Since my last report the weather has continued very dry, so much so that the honey flow stopped Aug. 12 and bees have only made a living since. With no rain for three months it is remarkable that bees did as well as they did. On September 2 and 3 there was two inches of rain fall in northern Utah, which came too late to help the white honey crop. But with proper weather conditions there will be a secondary bloom that will help fill up for winter and promote late breeding.

As a usual thing this is a white honey country, but the long-continued drouth caused the bees to work everything that had any nectar. This produced a blend and consequently a light amber honey at the finish. One peculiarity was that the change in color was so gradual that it was impossible to keep the white and light amber separate. This makes it very difficult to grade comb honey properly.

I grade my honey fancy, No. 1 and No. 2. I can see no use for the grade "choice" when placed between No. 1 and No. 2. If all the grades were placed on a table and I were given my choice I would certainly take the best and the word choice placed where it is seems to me a senseless misnomer. I have seen a grocer have a lot of

cull honey arranged for display with a large placard over it saying "choice honey." So why not let them have the word to use over the display of any grade as they will.

Car-lot demand for both comb and extracted honey is quite active, and if our honey were all strictly white we could secure a little better price than last year. While the body and flavor of our honey is excellent, the shade holds the price down a little.—M. A. Gill, Hyrum, Utah.

Texas August weather was normal for the whole of Texas. In the southwestern sections the bees are enjoying their midsummer vacation. There was nothing in bloom, and the bees that were sufficiently ambitious spent their time in carrying water and cleaning house. The scale colony showed little loss of weight, which indicates that there was little brood-rearing taking place. Fall brood-rearing began about the first of September in this section.

In the black cotton section the bees are still gathering nectar. The indications are for a normal crop. The extreme northern part of this section will make more than a normal yield, because of an early flow from various spring plants early in the season. Eastern and southern Texas have made about 60 pounds average. It is to be remembered that while the honey produced in this section is dark in color, the average production is rather high and the yield constant.

It is Now Proposed to Grow Horsemint for its Essential Oils, Which Would Greatly Increase the Honey Resources of Portions of Texas.

The honey plant condition is good. The broomweed and sumac have made a good growth and only need the proper weather to give a fine yield. The same can be said of aster on the Gulf coast and in the river valleys. There is a movement now on foot to grow horsemint for its essential oils. This will be tried out by the State Experiment Station in co-operation with private parties. It is thought by those who wish the experiment tried that it will be a paying proposition. The Apicultural Research Laboratory has been growing horsemint for the past ten years, and has tried to induce beekeepers to increase their acreage that grows wild.

At the meeting of the State Beekeepers' Association at College Station, August 1, H. E. Coffey issued an invitation to all those interested in the formation of a honey-selling association to meet at San Antonio, September 2 and 3. Some fifty beekeepers responded to this call. Various state and federal marketing officials were present, including Mr. H. J. Clay, who has represented the beekeepers in the government market reports for years.

The beekeepers formed a temporary organization with H. E. Coffey as president, and W. E. Jorden as secretary. A committee of eleven beekeepers representing the honey producing areas of the state were selected. The officers and committee were instructed to prepare articles of incorporation, a constitution and by-laws, and a working plan for a permanent association. This committee is to complete the preliminary work and report to the members just as rapidly as the work can be accomplished.—H. B. Parks, San Antonio, Texas.

Kansas The main honey flow has been over since some time in July for most beekeepers in the state. The crop conditions are spotted, due to the local weather conditions. Reports come in all the way from almost nothing to that of a full crop. The quality is fully as good as that of last year and in some places it is a little better in color and flavor. This should stimulate sales. The fall honey flow from heartsease and Spanish needle is spotted in the extreme eastern part of the state.

Heavy Winter Loss May Again Occur in Colonies from Which Too Much Honey Was Taken, Leaving Them Without Sufficient Stores During a Dearth of Nectar.

The beekeepers in many parts of the state this year have had conditions similar to those of last year. During a greater part of July and all of August, there has been no honey flow. Where honey has been removed too close, brood-rearing has been curtailed with the result that there will be a small number of bees present to go into winter. This was one of the contributing factors to the heavy winter loss of the past winter. In spite of the heavy winter loss of last winter, beekeepers are still optimistic and have in many cases built up again to former numbers.

The Mid-West fair circuits began with the Iowa and Missouri State Fairs in the latter part of August. The Kansas State Fairs are just beginning and will be in session until September 20. Beekeepers during the past two and three years have been taking more interest in the exhibition of bees and honey. This is one way to advertise the quality and uses of honey, bees and beeswax. Many people attending fairs are there to see and learn more about agricultural products and their production. Through the exhibits, beekeepers advertise their wares and increase sales, educate the public and create a better understanding of beekeeping as a whole.

In the state there are several beekeeping associations. The majority of these are of a county or local nature. During the last two years, several of these organizations have been created and are carrying on in a strong manner. Members of such organizations are able to discuss matters of vital interest and to hear speakers who are leaders in the work. Beekeepers in this fashion obtain much valuable information and help. The organizations in Kansas are Allen, Coffey, Labette and Marshall-Nemaha County beekeepers' associations; the Kansas State, Arkansas Valley, Heart of America, and Kansas Commercial beekeepers' associations.—R. L. Parker, Manhattan, Kans.

Pennsylvania In the past few days copious rains have fallen all over the state. More rain is needed to renew the dry springs and wells, but sufficient rain has fallen to greatly benefit vegetation. It came too late to help the buckwheat which has been badly scorched by the hot sun. Goldenrod and asters are blooming and promise a good crop of winter stores. Northern counties report a fair honey crop, while in most of the state the season has been disappointing. Brood-rearing conditions are good now and no doubt the bees will be in good condition for winter.

In the markets the old honey has been cleaned up and some of the new crop is in evidence. The prospects are for a fairly good market condition, although few Pennsylvania honey markets ever pay good prices. The demand seems to be mainly for the lower qualities at low prices.

On August 16 the Pennsylvania State Beekeepers' Association held its annual field day, partly at the home of J. B. Hollopeter, of Rockton, and partly at the home of the writer. It was one of the most largely attended ever held in the state. Mr. H. H. Root was the out-of-state speaker.—Geo. H. Rea, Reynoldsville, Pa.

Louisiana Returning recently from an extended trip over the state, I find that most of the honey to be had this year, has already been made. Usually at this time we are having general rains and fall flowers are everywhere in profusion. This is not the case now. During the summer we have had drouths in almost every part of the state, particularly in the middle and northern portions and it is continuing into the fall. The honey crop has been cut to about half of its usual amount. The southern section or coastal belt, has fared better. Some of the beekeepers in this district have made the usual yield and are counting on a good fall honey flow. As an unusually light colored honey is made here, there is a sharp demand for it, which is bringing quite an advance in price over previous years.

There is Still Plenty of Time in the South for Colonies to Store Enough for Their Winter Supply and Possibly Some Surplus if There is Enough Rain.

Should the fall rains come soon in the north portion of the state, the bees will have several months yet to store their winter supplies, and as most of the hives are very populous they may store a surplus besides. Usually from September 15 to November 15 there is a large surplus made. I have seen colonies store more than 150 pounds average during this period.

At this time last year beekeepers who had a few barrels of honey were seeking a market, and the prices that were offered them were ruinous to the industry. This year conditions have changed considerably. Buyers are now offering a flat rate at an increase of thirty-three to fifty per cent over last season's prices.

There is much interest among beekeepers now over the honey to be displayed at the various fairs over the state. There were many individual exhibitors at the State Fair last year, making some very beautiful and interesting exhibits of bees

and honey. More have promised to come this year. These exhibits always attract great crowds who linger long asking questions about bees and honey. Each of the twenty-one county exhibits displayed more or less honey. Several of them made honey a specialty. Notably among these displays were those in the negro building. Some of them were outstanding in their beauty. The total premium list offerings on bee products of five fairs this year amount to more than one thousand dollars.—E. C. Davis, Baton Rouge, La.

Minnesota One of the finest displays of honey and wax and products made from honey ever exhibited in the state was shown at the Minnesota State Fair, August 31 to September 7. The exhibits were located in a very desirable part of the large Agricultural building and many thousands of interested people had an opportunity of seeing them. The total attendance during the fair was something over 426,000.

One very interesting feature was the demonstration of honey as a food, which was carried on every day of the fair by a trained demonstrator and dietitian, Mrs. Ida H. Cornforth, with the Kellogg Company, Battle Creek, Michigan. She was given a very favorable location for her booth among the honey exhibits and right next to the booth where there was a demonstration of honey extracting. Several thousand interested women watched Mrs. Cornforth during the course of the week and listened to her explain the merits of honey as a food. She had a very attractive booth, outfitted with a General Electric refrigerator, a Monarch electric stove, and a Hoosier kitchen cabinet, all of which were loaned for the purposes by companies in Minneapolis distributing those goods. Mrs. Cornfoth told me that the commonest remark made by the women who listened to her was to the effect that they had no idea that honey could be used in so many different ways, that they had honey in the house but never thought of using it except as a spread on bread or pancakes, and they added that they intended to try honey in these new ways in their homes. Some of these women were the wives of beekeepers.

The Kellogg Company Demonstrated the Uses of Honey at the Minnesota State Fair This Season.

At the meeting of the American Public Health Association and the American Child Health Association to be held in Minneapolis, September 30 to October 5, the Kellogg booth will be in charge of the American Honey Institute. This will give a wonderful opportunity of bringing honey before one of the most important meetings that is held in this country. Through the same arrangements honey will be brought before the American Dietetic Association at Detroit, October 7 to 10, and the National Dairy Show in St. Louis, October 14 to 18.

It is impossible to estimate the tremendous value of these demonstrations and of the work Dr. Barnard and Miss Fischer are doing through the American Honey Institute. Let all beekeepers give them all the help they can! For these displays and demonstrations a large amount of honey is needed. The Institute should never have to buy honey. Honey is the cheapest thing that the beekeepers can furnish. There isn't a beekeeper who could not send at least a 5-pound pail to help out in this work. Miss Fischer has stated that any honey that is sent to them will be a very welcome help and will be used by them to the best advantage. It should be sent to Dr. H. E. Barnard, President of the American Honey Institute, Chamber of Commerce Building, Indianapolis, Ind.—M. C. Tanquary, St. Paul, Minn.

Michigan Drouth prevented a fall honey flow of nectar in many sections, particularly in central Michigan. The scale hive in the college yard has gained back just enough to equal its weight July 21, namely 502 pounds gross. There was no rain in this locality from July 4 until September 5. Possibly this dry weather accounts in part for the unusually heavy body of our white honey.

Sales of honey at the fair booths were not quite up to the average, probably due to the oppressively hot weather, but a great deal of honey was sold by exhibitors at $1.00 for the 5-pound pail.

Naturally at this season every conversation with a beekeeper begins or ends with mention of honey prices. From many such discussions in the past few days it appears that there are two schools of thought in regard to current problems of

honey marketing. One school is represented by the beekeeper who goes after the chain-store trade on a strictly competitive price basis, justifying his stand by one of these stock arguments or alibis: (1) He is willing to share his profits (?) with the customer, or (2) cheap prices must be met with cheap honey.

Those Beekeepers Who Advertise Honey at Every Opportunity, Supply Only Good Quality for Table Use and Maintain Living Prices Are Rendering a Great Service to the Industry.

In the case of the first argument, the per cent of profit in beekeepers' sales to chains at 50 cents for the 5-pound pail, is largely imaginary, and it should be noted that, even if the beekeeper should be philanthropic in his views, the chain store still takes its normal margin of profit on the sale. At least the chains know how much it costs them to do business. As for the second argument, the only sound policy for the beekeeper is to sell only good, palatable, first quality honey in retail packages, no matter what store handles the honey. No store, firm or manufacturer has been able to weather the storm of the last few years with a "cheap" article.

The other school is represented by more beekeepers than the casual observer would guess—beekeepers of the type who never miss an opportunity to advertise at fairs, in store windows, at the city markets, in the bee journals, and who have a very definite idea of what their honey is worth, even if commission men offer two or four cents per pound less. These men would rather carry over a little honey than give it away and pay for the freight. In this class rests the hope of the future stability of the honey market, not only in Michigan, but throughout the world.—R. H. Kelty, East Lansing, Mich.

Southern Indiana

The weather at present is exceedingly hot and dry, and unless rain falls soon the fall honey flow will be short. There is now (Sept. 4) a nice honey flow from smartweed, Spanish needles and Joe Pie weed. It is curious how some colonies work on one kind of flower while other colonies work on others. I have one colony of Carniolans that gets a honey different from any other. The honey tastes and smells like Spanish needle but it is water white. Evidently they have found a patch of weeds that no one else knows about. The honey is delicious.

Dry Weather Made It Difficult for Bees to Gather Pollen. This in Turn Resulted in Decreased Brood-rearing.

It has been very interesting to note the effect of pollen upon brood-rearing. It is known that pollen hangs on longer in damp weather and shatters off quickly when the weather is dry. While the weather was damp, the bees brought in an abundance of pollen from corn. They worked on this till about noon. As the weather got drier, the time they worked on the corn tassels grew shorter. While there was dew they worked well, bringing in large fat loads, but as soon as the sun became hot, no more pollen came in. It is now so dry that there is no dew on the grass and the bees are getting little pollen. Brood-rearing is slackening rapidly, but the honey flow is increasing. If we get a rain so that dew again forms on the vegetation, it will be interesting to see if pollen again comes in and if brood-rearing will be increased.

Honey has been selling slowly, but I believe there is a growing demand. All farm crops seem to be moving better than formerly, and it looks as though the dull times that have held forth for a few years past are passing. It seems that when times are hard the people cut out honey first of all, for they consider it a luxury. With the return of good times honey will again come into its own.

Members of the Illinois Beekeepers' Association, while on their tour, paid us a visit. I told them I would show them a queen bee at least five times as large as any Italian queen they had ever seen. They were greatly interested in this and I led them to a small mating hive. I explained I would first show them her bees. I rapped on the hive with a stick and out they came—about a quart of them. They were bumblebees. None of that bunch stayed to look at that queen. Those bumblebees are getting the hive filled with brood and bees. They now have half a dozen big queens and a lot of yellow drones so they are planning on swarming. I do not know much about swarm prevention with bumblebees, so guess they will have to swarm.—Jay Smith, Vincennes, Ind.

Ontario

During the past three weeks (this is September 10) we have had but little rain here in York County, this being the first drouth we have had here since late June. Although we had lots of moisture through the early part of August, the weather was too cool for a heavy yield of buckwheat honey. As a result the crop is not heavy from that source. While we have had much rain all summer until the past few weeks, such has not been the case over much of Ontario, judging by reports and by what I have observed in traveling about from one section to another. So much moisture was in evidence that the wild raspberries in many cases are blooming now. The bloom is on the young canes of this year's growth. This is the first time I have ever observed raspberry bloom in September except on the everbearing varieties that are cultivated. Every time we go to one apiary we can pick large ripe berries and it seems strange to see the bees freely working on the bloom at this time of the year.

The crop of white honey has been generally good, so far as I can learn, all over the province. Demand is good and honey is moving fast at prices slightly lower than last year.

Drouth in Portions of the Clover Region Has Caused the Meadows to Turn Brown and Probably Injured the White Clover Plants.

In company with Mrs. Byer and three friends, I have just returned from a trip that took us across western Ontario, through Michigan, then from Port Huron to South Bend, Indiana. Distant pastures look green, so the old proverb goes; but in this case it did not turn out that way. Leaving fields that were green everywhere with new clover up to one's knees in some places, it was quite a change to see parched fields everywhere. I told some on my return that in crossing Michigan I did not see a handful of green grass aside from what was on lawns in towns we passed through. This may be an exaggeration, but I certainly never saw so many thousands of acres of parched land before, and it was a wonder to me how stock could live on some of the so-called pasture lands. Conditions were much the same from the time we left Georgetown, Ontario, until we reached Elkhart, Indiana, where the drouth had not been as severe.

While we passed through all kinds of land in the five hundred miles west, there is no question but that it looked at its worst, owing to the severe drouth. But making allowance for all that, it was the general opinion of our party that we saw nothing that looked quite as good as Markham, Ontario. From a beekeeping standpoint I certainly saw no place that I would exchange for our own locality, at least under this year's conditions. I believe that we have more buckwheat (which is not an unmixed blessing) in the two townships in which our bees are situated, than we saw altogether in our 1200-mile trip.

As for next year's prospects, I can not see how a crop of honey can be expected from white or alsike clover, as there is absolutely no clover to be seen in most of the places we passed through. I hope I am wrong in my prophecy in this regard. Time will tell whether I am mistaken or not.

The crop of honey everywhere on our route has been good this year, and the quality of the clover honey right down into Indiana was above the average I was told. At several places I tasted the honey and I can testify to the quality being fine. About all that was on sale in Michigan and Indiana appeared to be comb honey.

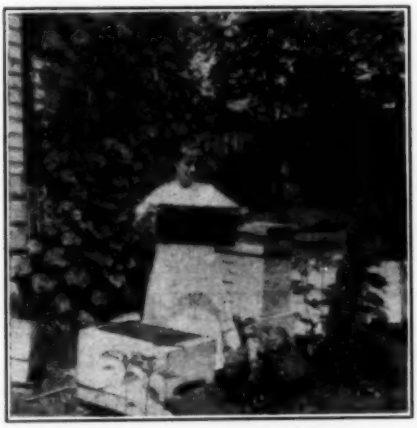
While the honey flow from buckwheat is not as heavy as some years, I have an idea that the brood-chambers have more honey in them than usual. During all the season there was a tendency for the bees to store more below the excluders than usual. This was caused, in our own bees at least, by the fact that they were in a starving condition before the honey flow opened and naturally rather weak in bees. The honey flow came on quite rapidly at first and under those conditions honey is bound to go into the brood-chambers.

Today we are loading two cars of honey here at Markham. When it is out of the way we must take off about 1000 supers of buckwheat honey which are not all filled as well as they might be. Then feeding and packing is in order. If all goes well, by November 1 the season for 1929 will be a thing of the past; and we are all one year older than a year ago. Beekeepers in all the northern zone have had a fair year, and without waiting for Thanksgiving day, surely we have much to be thankful for even right now.—J. L. Byer, Markham, Ontario.

This Woman Loves Her Bees

From childhood I have been interested in bees. My father was an old-time beekeeper, using box hives. I married a beekeeper-merchant, so to help my husband, who was often very busy in his store, I began learning beekeeping in earnest. My first real experience came in hiving a swarm. The good man of the house was absent. A step-ladder was necessary to reach the swarming bees, while a lard can with a piece of white cloth for a cover served as a swarm-catcher. It was a very large swarm, but I secured it in good shape.

The next step was learning to put up sections and section-holders, fill supers and nail together frames. Later, under the careful supervision of husband, I learned to find the queen, also to know when and how to cut out queen-cells. I loved this work and the more information I gained the more wonderfully fascinating the work seemed.



She Gets Her Best Rest and Recreation in Working with Her Bees.

In order to learn better how to handle bees, I ordered a two-pound package of three-banded Italians and queen. Since these were said to be the gentlest, I selected them. Following instructions, I fed them every evening for some time. It was a joy to see them come up like little chickens for their feed. Stinging never once seemed to occur to them. They would light on my hands and crawl to the syrup. I was complete "boss" of these bees. Almost every day I took a look for the queen, just to know her (so perfectly beautiful) and to learn to handle the frames. Of coure, it goes without saying I was interested.

From the last of May until September that package filled the brood-chamber and stored 20 pounds of surplus honey in a very poor honey season. Two seasons later the same colony gave 165 sections besides those partly filled and partly capped.

My next venture was to avoid winter packing by using the double-walled hive, and I found it just the thing. By way of experiment, we changed some colonies into single-walled hives for summer, but found little if any difference in results.

I have helped my husband shake a number of colonies, and am so glad to be able to say without boasting that I worked right with him clear through. We used neither veil nor gloves. I had elbow sleeves. Did we get stung? you wonder. Well, I got two or three stings, but we don't mind that when we take out the stingers immediately.

Although we work with our bees for recreation, pleasure and health, we have always made them pay their own way and yield a profit.

Our colonies are located right below the kitchen window, and many times when I am dead tired I drop everything, slip out and spend perhaps a half hour looking over the brood frames of one or two colonies for "just a peep at the dainty queen." This is such an inspiration to me that I go into the house more rested and refreshed than I would feel after a two-hours' rest on a couch.

—Mary McC. Henderson, New Wilmington, Pa.

Heads of Grain from Different Fields

Taking Honey from Combs Without Extractor Some time ago some one asked in Gleanings how to take honey from combs without an extractor. I have scraped the cells and honey to the midrib with a sharp tablespoon, taking care not to tear out the foundation. It worked well with old combs, but not so well with new combs. By scraping half the depth of the comb on one side, then half the depth on the other side before cutting down to the foundation, I have taken honey from new combs without breaking.—C. Wanty, Rainier, Oregon.

Crop Reduced by Swarming Bees began to swarm here the last of April and swarmed until the middle of July. Early swarms swarmed the second time. People who had one or two colonies to begin the season with now have 10 to 15 colonies. I have had only one swarm in my own yard in two years, none this year. One beekeeper told me he had 20 colonies in the spring and doubled the number. At that time he had one to two supers on while I had six to eight supers on my own colonies. This was about 10 days or two weeks before the honey flow stopped.—Charles Zick, Covington, Ind.

Wintering in Two Stories in South I am preparing my bees for winter now. I understand that some of the beekeepers will have to feed or unite some of their colonies. I am very fortunate as I will not have to do this. I owe the good condition of my colonies to the double brood-chamber. I winter all my colonies in double brood-chambers with about forty pounds of honey. I find this the best method as they do not respond to stimulative feeding in the early spring when increase is necessary. It is essential to have a large force of bees on hand by the first of March for orange bloom. I requeen every other year and find that this controls swarming. My hives average ten frames of brood at this time. They also have plenty of pollen so they should be well fixed for a fine year which we are looking forward to.—H. W. Land, Apopka, Florida.

Fine Quality Goldenrod Honey The accompanying illustration shows the ten combs from the first super put on one of my hives at the beginning of our fall honey flow. These combs were well filled with goldenrod honey. There is not an unsealed cell on any comb. This honey I judge to be almost if not quite 80% to 90% goldenrod, as goldenrod bloomed a rather long time here before aster, and these combs were well sealed before any aster was being stored. These combs are so well filled and built from wood to wood of the frames that they would grade as fancy if they were comb-honey sections. Two of the combs show an area in which one generation of young bees had been raised before the combs were filled, although they are newly drawn combs from full sheets of foundation.—Arthur Heinrich, Baldwin, N. Y.

A rapid honey flow from goldenrod results in well finished combs.

Stakes to Hold Winter Packing For winter packing I use a crowbar to make holes around the hive about three or four inches apart. Then I drive stakes in these holes. A wire around the top holds the stakes in place. I go to the park and rake up leaves and stuff them under the hive and all around it.

Then the south side is as well protected as any other part of the hive. Even as far south as this, the packed bees consume less honey during the winter than those that are not packed and they come out a good deal stronger. I believe in a young queen every year for each colony except an occasional extra good one that one doesn't want to kill. I have been in the bee business 69 years and I am beginning to feel my age.—A. N. Draper, Lynchburg, Va.

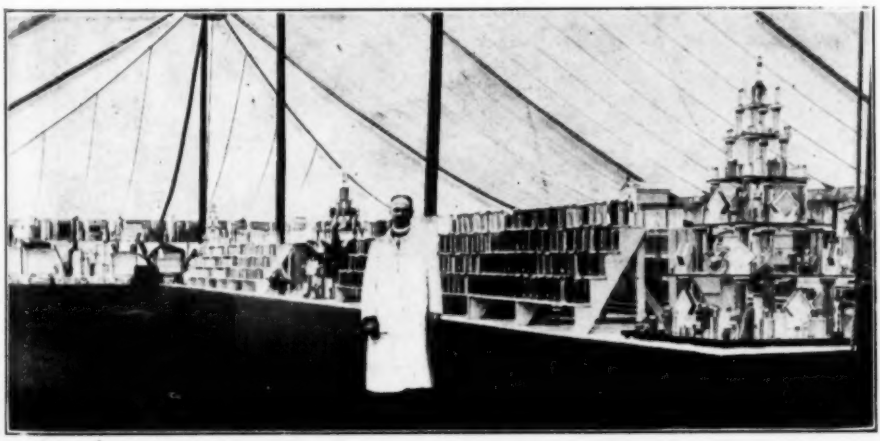
Better Smoker Fuel For years we have used ground corn cobs soaked in oil from the crank case. Some excelsior will start the cobs. Use dry cobs till you get a bed of coals, then put in the oily ones. If you have much use for the smoker, get some saltpeter, dissolve it in water, soak some cobs in the solution for a couple of days, then dry them in the sun. When lighting the smoker use excelsior and the saltpeter cobs, then some dry cobs, then the oily cobs. You will get a great volume of smoke and it will last half a day. The smoke will not impart odor to honey.—Jay Smith, Vincennes, Ind.

Typical English Summer Honey Show The accompanying picture shows the layout of the Gloucestershire Beekeepers' Association's summer show. In addition to honey in the comb, in granulated form, and in liquid form, the exhibits include beeswax, cakes sweetened with honey, nectar-producing flowers in bloom, and exhibits of an educational nature. Extra attractions are the delightful displays built upon glass shelves in which slender and artistic jars show off their contents to perfection. In conjunction with the honey, collections of hives and bee appliances add their share of interest.—A. H. Bowen, Cheltenham, England.

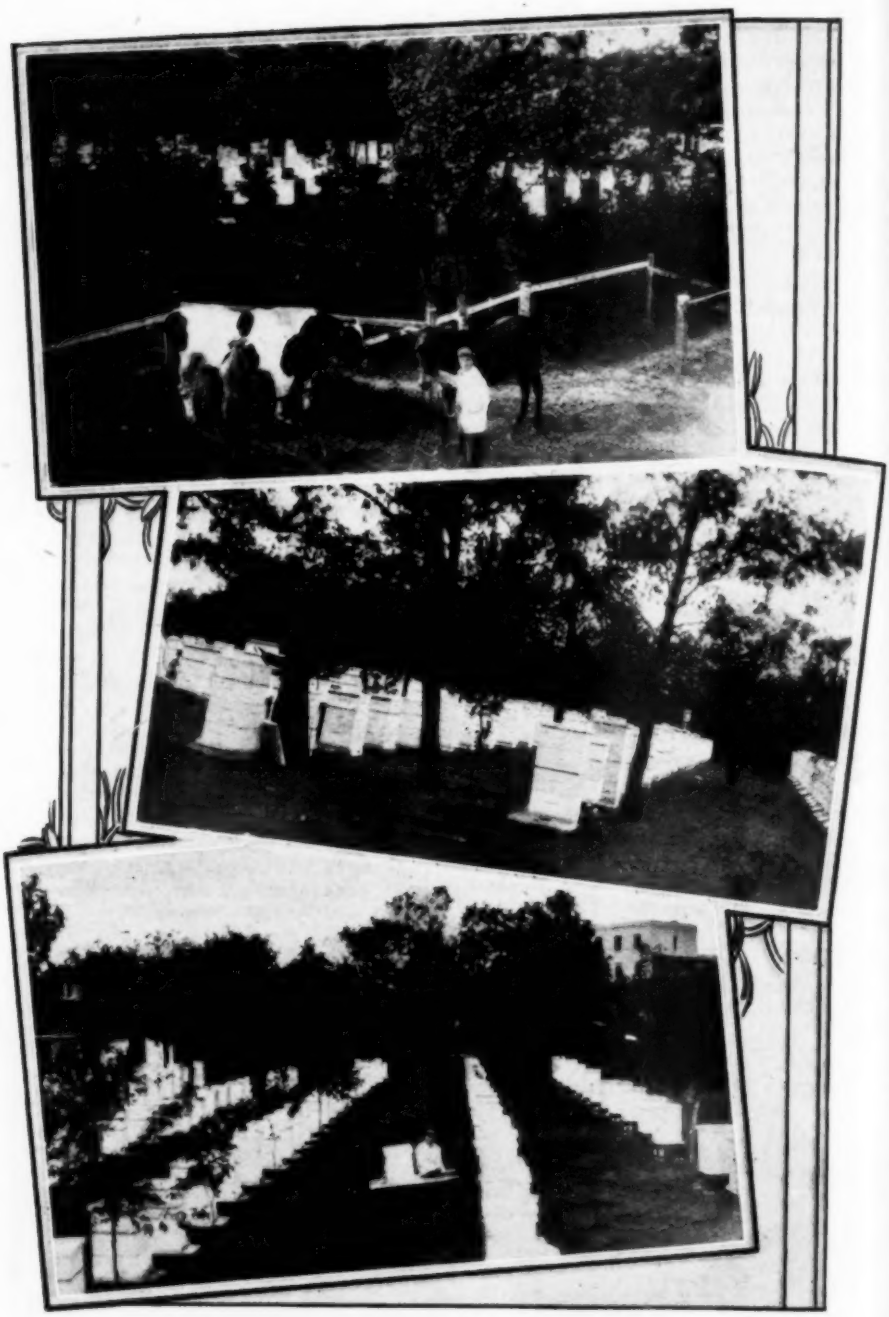
Grading Honey as to Flavor If the time ever comes when honey is graded for flavor instead of color, we need not fear any rival. Mr. Dodge's article in the August issue of Gleanings is a very timely one, and should be read and digested by all beekeepers. The question of government grading is still in the argumentative stage, and will be sure to come up again at our annual central executive meeting at the end of the year. To my limited understanding the subject is utterly futile, as it tells absolutely nothing about the individual honey. One can always see what color they want in a store, but how to tell flavor is the query, and after all, that is the important point at issue.—Florence A. Greenwood, Victoria, B. C.

Hives Packed During Summer I do not believe the article on page 359, June issue of Gleanings 1929, should pass without comment. I can not agree with the conclusion that summer packing is a disadvantage. My bees were kept packed throughout the year. The

(Continued on page 677.)



Summer honey show in England, by the Gloucestershire Beekeepers' Association.



APIARY OF MAISON ST. JOSEPH, OTTERBURNE, MANITOBA, CANADA.

Upper—Thoroughbred stock and bees. Apiary as seen from roof of the stable. Middle—Neatness and order prevail here, even though it is in the midst of a good honey flow. Lower—The other half of the same apiary. The hives in this half are on iron hive-stands.

Just News

Editors

The report of the 20th annual meeting of the Maryland Beekeepers' Association recently published by the Maryland Farm Bureau Federation contains several interesting papers, among which is one by Dr. C. E. Burnside, assistant apiculturist, Bureau of Entomology, Washington, D. C., on sterilizing combs containing American foul brood with formaldehyde gas. In this paper is a preliminary report of experiments conducted at the bee culture laboratory with this method of sterilizing combs. Under laboratory methods the sterilization was complete in open cells after exposure to the gas for 48 hours. In sealed cells sterilization was complete after exposure to the gas for 11 days. It was found that formaldehyde gas penetrates stored pollen readily so that pollen plugs become saturated after two or three weeks' exposure. Upon drying the formaldehyde soon evaporates from the pollen. On the other hand, honey absorbs formaldehyde slowly, but retains it for a long period. Since formaldehyde is poisonous to bees it does not appear to be practical to sterilize combs containing cells of honey by this method.

By an amendment to the "Apiaries Act" of the province of British Columbia, Canada, all apiaries are now required to be registered and beekeepers must have a certificate of registration to comply with the law.

"The New Zealand Honey Producer" is the title of a new bee journal published at Christchurch, N. Z. It is edited by W. B. Bray.

Dr. H. E. Barnard, President of the American Honey Institute, expects to do considerable traveling during the fall and winter and suggests that he will be glad to attend beekeepers' meetings wherever possible if notified of the date and place of the meeting.

The series of articles on honey by Dr. Barnard that have appeared in "Bakers' Helper" during the past several months are to be printed in a 36-page booklet. It is the most important compilation of honey formulas for bakers' use that has ever been published. The booklets will be furnished at cost to beekeepers and dealers in honey for distribution to the baking trade. A sample copy of the booklet can be obtained for 5c by writing to the American Honey Institute, Chamber of Commerce Building, Indianapolis, Ind.

Honey is to have another boost from outside sources. We understand that an advertisement by the Glass Container Organization of America, showing a jar of honey is to appear in the October issue of the Ladies' Home Journal and in the October 12 issue of the Saturday Evening Post. So much honey is now being sold in glass that the Glass Container Organization of America thus recognizes the honey industry.

The annual exhibit of honey at the Pacific International Livestock Exposition will be held in Portland, Oregon, on October 26 to November 2. Beekeepers of the Pacific Northwest especially are earnestly urged to send their exhibits of honey to this exposition, as it is an event of more or less national importance. Premium list and full particulars may be secured by writing to S. D. Williams, 5125 82d Street, Portland, Ore.

The latest and largest food merger, known as Standard Brands, has brought together the great organizations of the Royal Baking Powder Company and the Fleischmann Yeast Company with its several subsidiaries. Both of these important food groups are interested in honey. The Royal Baking Powder Company because it recognizes the importance of stimulating an interest in the use of its product by such appetite compelling phrases as "Honey and Hot Biscuits" and "Honey and Hot Waffles," and the Fleischmann Yeast Company because of its desire to improve the quality of bakery products particularly through the use of high-grade materials such as honey. Both groups have been co-operating with American Honey Institute in promoting honey.

Food Department

Malitta D. Fischer

Honey Goes with a Traveling Bakery

The Fleischmann Yeast Company, because of its desire to improve the quality of bakery products, particularly through the use of high-grade materials, has had built for use in its Traveling School three trucks, which make up the entire school. The company maintains this traveling school for the education of bakers. This school gives courses free of charge to the bakers of the country. It not only uses honey in demonstrating the manufacture of goods at the school but includes honey in the mimeographed and printed formula sheets distributed to all registrants as well as displaying the honey goods in the attractive illuminated show cases. Before I mention the honey combinations this school shows those attending, you may be interested in a description of this unusual plan.

The Hahn Motor Company, of Allentown, Pennsylvania, built the trucks, which are equipped with Continental motors and Firestone tires. The power plant travels on one truck and the salesroom with illuminated show cases and display section is built on the third. When the school is set up two trucks are placed about thirty feet apart and by means of hinged body panels, a few supports, and some canvas tenting, a fine auditorium which houses the collapsible but upholstered seats is formed.

Bakers who complain of lack of space in their shops can profit greatly by the inspection of this new bakery which is completely equipped for making all kinds of baked products and yet is built into a space of 144 square feet. Not only is the space limited, but the shape affords another handicap in design in that the length is more than twice the width. Its actual dimensions are 18 feet long, 8 feet wide and 7 feet high.

The bakery is both portable and fixed. It is fixed in the sense that all of the equipment is permanently mounted, and portable in that the entire bakery is on wheels and may be moved from place to place without moving the equipment.

Power, Light and Fuel

The power and light for this bakery is supplied by means of an electric generator placed on a truck which is entirely separate from the bakery but connected to it merely by flexible electrical connections. This supplies the electricity required for conducting the operations simplified by its use, for lighting the bakery, for operating the mixers, and for heating the oven, proof box, hot plate, and hot-water tank. Two electric fans keep the baker cool and an exhaust fan draws out the heat and odors from the shop.

Floor Space Arrangement

The floor of the bakery is divided lengthwise into three about equal divisions. The back third of the floor is made up of built-in equipment. The center third is an aisle in which the baker works, and the front third supports a bench with fitted drawers. This means that two-thirds of the floor space is occupied with equipment and one-third is available for the baker to perform his various operations.

The rear wall is built entirely of Allegheny metal, which is stainless and rustproof. It was built specially for the plant by the Union Steel Products Company. A two-deck Edison oven is used for all the baking and the space above and below the oven is utilized as a warmer and proof box, respectively. The sink in the center of the rear wall is supplied with hot and cold water and a drain board. Under the drain board is a Hotpoint electric water heater for supplying the necessary hot water.

A chest of drawers numbering sixteen, some of which are deep and some shallow, makes up the next section of the rear wall and contains most of the raw materials used in the goods. The next section has two flour bins of one-barrel capacity each, two bins holding 100 pounds each, and four small drawers for spices and flavoring extracts. The remainder of the rear wall space is occupied by the ice-box. The ice compartment h lds 255 pounds of ice and contains a water coil for supplying ice water for doughs and drinking purposes. The perishable raw materials, such as eggs, butter, milk and yeast, are kept in the cold storage chambers below the ice chest. The box is insulated with balsa wood.

There is a Read mixer with various at-

tachments, a small Read Mixonette for use in making icings, fillings and small batches. An Exact Weight scale is used for scaling the doughs and a bun divider for dividing the roll and bun dough. A two-plate electric stove is built into the top of the bench and under the bench is mounted a swinging bowl rack which is easily pushed out of the way when not in use. The last section of the bench carries sixteen drawers which contain the linen, small bakery tools, pans and a few ingredients.

Operated by Crew of Eight

Traveling with this school are eight men headed by their manager, Wm. E. Broeg, who is well known for his excellent work in teaching bakers all over the country through his work for the Fleischmann Company. The rest of the crew is made up of Jack L. Hawkins, Bill Romain, Charles P. Corcoran, James C. Jewart, Roy Kling, Paul W. Triechler and Frank C. Brown. This staff includes the instructors and the engineers who operate the power plant and truck equipment and take care of the setting up, tearing down and moving of the school. It requires about three hours to pack ready for the road and about ten hours to put the school back into operation after moving.

The school opened at Allentown, Pennsylvania, and has made stops at Scranton, Pennsylvania, and Columbus, Ohio. The writer with Dr. Barnard had the opportunity to visit this school when it was located at Indianapolis the last half of the month of August. The next stop for the school will be Grand Rapids, Michigan.

The seating capacity is 175 and a small pup tent affords room for placing a few folding chairs to increase the capacity slightly. During its stays in Indianapolis, the school had almost capacity attendance. The classes are held from 3 to 5 p. m. daily and, when attendance demands, two classes are run simultaneously, one meeting from 9 to 11 in the morning and the other from 3 to 5 in the afternoon. The course continues for nine days of a two-hour period each day and includes general instruction and demonstration on fermented goods, including bread, rolls, sweet yeast-raised goods, and a complete line of cakes.

Honey Items

On the occasion of my visit to the school, the items being discussed in which honey was one of the ingredients and for which formulas were included in printed matter distributed, were honey almond-topped coffee cake, honey pecan rolls, whole wheat bread, malt honey spice drops, vanilla creams and malt jumbles. Remember, recipes for all of these items were included in the printed matter distributed to the bakers who were registered.

In the illuminated show cases were honey almond-topped coffee cake, honey pecan rolls and malt honey spice drops. Among the advertising material prominently displayed were two posters illustrating the honey pecan roll and the honey almond-topped coffee cake.

The Accumulative Effect of Such Honey Advertising

Let's take a pencil and figure very conservatively. The maximum registration for these classes is between 175 and 200. For our estimate we'll take a registration of 100. Two periods of instruction of 9 days each for each city stopped at gives us at least 200 bakers for each school held. Considering eighteen days for one given location, two days of traveling to reach the next stop and one day allowance for set-up and arrangement would give us 21 days or three weeks as a maximum time allowance required for each city where a school is conducted. That means this great traveling school reaches not less than 4000 bakers in a year in its educational and demonstrational baking work. Just think of having direct contact with that many bakers and actually having honey formulas given to that many workers in this field. Isn't it fine that we have the co-operation of so great an organization as the Fleischmann Company and isn't it still finer that the manager of this unique school for bakers is personally enthusiastic about honey and is experimenting with formulas for making honey goods?

Dealers in honey will find a visit to the school well worth while and it may be of interest to you to know that Mr. Broeg, direction of this school, with its thousands of students a year, learned of the work of American Honey Institute when Dr. Barnard and the writer visited the Annual Cake and Retail Bakers' Conference at Chicago last February. Since then American Honey Institute has been in close touch with Mr. Broeg to experiment with honey formulas for bakers' specialties and it is indeed gratifying to find these workers actually demonstrating honey bakers' goods as well as distributing the formulas for the same.

Talks to Beginners

Geo. S. Demuth

In most northern localities the final touches in the care of the bees will be given this month. This last work of the season is quite important, since it involves the final preparation of the colonies for their winter ordeal. After the hives have been arranged to make the bees as comfortable as possible during cold weather, there is but little if anything that the beekeeper can do for the bees from October until April or May. In fact, many commercial beekeepers prepare their bees for winter in October, then go south to spend the winter, leaving the colonies without any attention until spring. In the South, final preparations for winter may not be given until next month and beekeepers who winter their colonies in cellars in the far North may not carry their bees into the cellar until some time in November. With these exceptions the season's work with the bees should be finished this month.

Those who have only a few colonies are often inclined to postpone the final preparation of bees for winter during the usually fine weather of October, then when bad weather makes its appearance, they find it much more difficult to put the colonies in good condition. Beginners, therefore, are urged to finish the preparation for winter before the end of the month.

The Broodless Period

Bees quit rearing brood some time during this month in the North. In some localities brood-rearing is stopped before October 1, while in others it may continue until the latter part of the month. If the colonies winter well they do not again rear brood in the North until March; but if the winter is severe and the bees age rapidly because of poor food, lack of protection, lack of numbers to maintain the warmth of the hive, or because the bees were old at the beginning of winter, they may begin to rear brood again as early as January in the North. In the South brood-rearing is continued later in the fall and is usually begun again in January or early February, thus making the broodless period shorter. As a rule, the better the bees winter the longer the broodless period for any given locality.

Beginners will notice that the behavior of the bees is quite different as the nights become cool. They appear to be quite sluggish or sleepy compared with their activity during the summer. It is by this means that they are able to prolong their lives to span the broodless period. If they lived only as long during the winter as they do during the active season, those forming the winter colony would all die of old age probably before Christmas. During the summer the population of the hive is kept up by rearing large numbers of young, but during the broodless period the population is maintained by prolonging the lives of the individuals through the novel means of remaining quiet. Beginners will be interested to note the extreme quiescence by peeping into the hive without disturbance and noting the motionless bodies of the bees between the combs. Thus they live so slowly that they do not age materially until they become more active in the spring, unless compelled to be too active in order to keep warm or because of some other disturbance.

The Winter Cluster

On frosty mornings the bees will leave the corners of the hive and form a cluster. If the hive is single-walled, the cluster is smaller and more compact than if the hive is double-walled. As the weather becomes colder the cluster becomes smaller, then when the weather warms up again the cluster expands. Thus the cluster of bees in a colony wintering perfectly might almost be used as a thermometer indicating roughly the temperature of the air surrounding the bees.

This winter cluster which is somewhat spherical in shape should occupy at least five or six of the spaces between the combs when the temperature outside is near freezing. Smaller colonies will have greater difficulty in pulling through the winter. In a double-walled hive the cluster of a strong colony is much larger at the same outside temperature, often touching both sides of the hive.

Since it is now too late in the North for the colonies to rear more young bees, it is a good plan to unite two or more colonies that occupy only three or four of the spaces between the combs in a single-walled hive on a frosty morning. If the uniting is done late this month, it

is not necessary to take precautions to prevent the bees of the two colonies from killing each other, such as placing a sheet of newspaper between as mentioned in these talks last month. Instead, two or three small colonies can be put together directly without any trouble from fighting. If the colonies are quite small, the combs not occupied by bees can be taken from one hive, then the group of combs on which the bees are located in the other can be lifted together and set in place in the other hive so that the bees of one colony will be in contact with those of the other. No attention need be paid to the queens unless one of them is inferior, in which case it is well to find and kill the inferior queen on a warm day prior to the time of uniting.

Although it is usually better to unite weak colonies, by a little extra care colonies that occupy only three or four spaces between the combs can be wintered separately. This can be done by taking away the combs not occupied by bees; moving the others to the middle of the hive; placing a tight-fitting division-board on each side; then filling the space outside the division-board with some good packing material, such as wheat chaff, dry forest leaves, or planer shavings. By thus making the hive smaller to fit the size of the cluster, it is often possible to winter these little colonies.

Winter Stores

Many beginners make the mistake of putting their colonies away for winter too light in stores. While a normal-size colony may not consume more than 15 or 20 pounds of honey during the winter, they need more than that to carry them through the early spring before the weather is warm enough to give additional food. It is, therefore, much safer to allow not less than 25 or 30 pounds. To carry them through until nectar is available next spring, 40 pounds or more may be needed and it is usually better to have this much in the hive in the fall instead of counting on feeding the next spring.

Experienced beekeepers can usually tell by lifting the hive whether the colony has enough honey for winter and spring. The beginner can determine approximately how much honey is in the hive by weighing the hive as it stands, then deducting the weight of the hive, combs and bees. To be on the safe side the standard ten-frame hive with metal cover should weigh at least 68 to 70 pounds to be well provisioned for winter. If any weigh less, enough sugar syrup should be fed to bring the weight up to at least 68 pounds. Those who provided each colony with a second story, either the shallow extracting super or the full-depth hive-body, and had this upper story well filled with early honey, will not need to do any feeding, and in some localities single-story hives are usually well provisioned by a fall honey flow.

An easy way to weigh a hive is to weigh one end at a time on spring scales, by hooking the scales under the end of the hive. The sum of the two readings thus obtained is approximately the weight of the hive.

The syrup for feeding at this season is usually made of two parts of granulated sugar to one part of water, either by weight or by measure. The water is usually heated to the boiling point when the sugar is stirred in. The mixture is then left on the fire until all the crystals are dissolved. This syrup can best be given in an ordinary friction-top pail by punching 25 or 30 small holes in the cover, then filling the pail with syrup and inverting it directly over the hole in the inner cover, or over a hole in a piece of tarred paper cut to fit the top of the hive.

Winter Protection

The last step in preparing the colonies for winter is that of providing winter protection if the colonies are in single-walled hives. If in double-walled hives, all that is necessary is to see that the chaff tray is properly filled with packing material and the packing crowded down against the water table to prevent air currents under it, then put the entrance-closer in place to reduce the entrance.

Single-walled hives can be placed in boxes enough larger than the hive to provide a space of two to six inches between for packing. A bridge must be arranged to connect the entrance to the outside so that the bees can fly on fine days during the winter. If a suitable box is not available, tarred paper can be used for making the winter packing-case as described on page 630 in this issue. If only a few colonies are to be packed, the ends of the sheet of paper that forms the rim around the hive can be pinned together with nails and the cover can be held in place by loops of binder twine extending over the cover and fastened to

(Continued on page 677.)

Gleaned by Asking

Geo. S. Demuth

Method of Killing Bees

Question.—What is the name of the gas used to destroy or kill bees? Does this poison the honey or make it unfit for the market?—H. J. Goodale, Montana.

Answer.—During recent years calcium cyanide has been used rather extensively for killing colonies of bees, especially in disease control. The form most generally used is sold under the trade name Cyanogas. It can be obtained from some of the larger drug stores. If you are unable to obtain this from your druggist you can get it from the American Cyanamid Sales Co., 511 Fifth Avenue, New York City. As we understand it, the fumes from calcium cyanide do not injure honey when used to kill bees. In fact, this material is used to kill insects around food products, especially in restaurants.

Bleaching Comb Honey

Question.—Is there any way of bleaching comb honey that is worth while? We have quite a little in sections and shallow frames that is slightly yellow.—Mrs. Asa Merriam, Ohio.

Answer.—It is often possible to bleach the cappings of comb honey to some extent by placing the combs in a south window so that they will be exposed to strong sunlight. It is necessary to expose them in this way for several weeks in order to bring about much bleaching, and it is sometimes impossible to bleach the cappings to any great extent. Much depends upon the character of the stain. Some kinds of stain will disappear when exposed to strong sunlight for some time, while other kinds will not.

Feeding Soured Honey Back to Bees

Question.—Will soured honey kill bees? I have quite a lot of such honey and have been afraid to feed it to the bees, fearing it would kill them.—Oswald Westphal, South Dakota.

Answer.—Apparently bees are able to use sour honey without injurious effects during the spring and summer when they can fly freely. It will not be advisable to feed this honey for winter stores, but it may be fed to bees in the spring. You can stop further fermentation and greatly improve the honey by heating it to about 140°, then running it into the cans while hot and sealing immediately with the screw cap. When put up in this way it will keep without further fermentation until time to feed it in the spring.

Keeping Combs Safe from Wax Moths

Question.—Will wax moths get into the combs if they are stacked tight?—Leon E. Klawiter, Wisconsin.

Answer.—Wax moth larvae often develop in combs that are stored away in a tight place. Apparently these come from eggs that were on the combs before they were taken from the hive, or from tiny larvae that escaped the notice of the bees. Beekeepers are often surprised to find the larvae of the wax moth in comb honey that was placed in tight shipping cases immediately after being taken from the hive and stored in a tight room. The explanation is that the eggs or tiny larvae were on the honey when it was taken from the bees. In your latitude it should not be necessary to take any precautions to prevent injury to combs by the wax moths this late in the season provided the combs are stored in an unheated room. In the South it is necessary either to put the combs back on the hives so that the bees can take care of them or watch them carefully and fumigate them with carbon bisulphide or sulphur fumes if any wax moths are found.

Corn Fodder for Winter Protection

Question—Could I winter my bees out of doors by placing a large shock of corn fodder around each hive?—Mrs. Henry Blomgren, Iowa.

Answer.—A shock of corn fodder around the hive would not afford sufficient protection because it is too loose, thus permitting the wind to blow through it to some extent. Thus it would let the heat generated by the bees escape rapidly and also shut off the direct sunshine, which must be of considerable benefit during the winter. A much better way to pack the bees is to use a rather fine material such as planer shavings, wheat chaff, or crushed forest leaves. The packing can be held in place around the hive either by using a box large enough to allow for three or four inches of packing between the hive and the box, or by cutting a sheet of tarred paper to go around the hive and another to be used as a cover. The packing material is then placed between the tarred paper and the hive.

Disposition of Outer Covers When Packing Bees

Question.—Should I take off the metal covers when packing bees in the winter packing cases?—W. C. Bargee, Pennsylvania.

Answer.—As a rule, the outer covers are taken off. This eliminates the air

space between the outer cover and the inner cover, and, theoretically at least, would result in keeping the hives slightly warmer. Many beekeepers store the outer cover in the packing case on top of the packing material to save the trouble of taking them into the shop for storage.

Protecting Hives with Fiber Board

Question.—Will any of the fiber insulating boards stand rain and weather like wood, provided they are painted or coated with creosote? If so, what would you think of nailing such boards to the outside of the regular single-walled hives to provide additional protection during winter?—Raymond Jenkins, New York.

Answer.—By painting these fiber boards with asphalt paint, they can be made to stand the weather. One beekeeper reports having placed the boards in a shallow pan of hot paraffin to waterproof them. These were then nailed to the sides of the hive instead of making double-walled hives. However, most of these boards are too thin if only a single thickness is used to supply adequate protection. In a cold climate several thicknesses would be necessary.

Ground Cork for Packing Double-walled Hives

Question.—What do you think of ground cork as an insulator in double-walled hives?—K. W. Stone, Massachusetts.

Answer.—Ground cork is very good for insulating double-walled bee hives. It is not only a low conductor of heat, but it also has the advantage of staying dry even in moist climates. The chief objection to it is that it is difficult to obtain it in sufficient quantities without considerable expense, whereas wheat chaff, planer shavings or forest leaves can usually be obtained in ample quantity at practically no cash outlay.

Wintering Bees in a Shed

Question.—We have an open-front shed in which I could put my colonies during the winter, and would like to know if that would be as well as packing them outside?—C. E. Monsettler, Pennsylvania.

Answer.—The old-fashioned bee shed of the box-hive days afforded considerable protection to the bees, since it was usually built facing the south with the ends and the back boarded up to protect the hives from the winds. However, such a shed does not afford complete protection unless the hives are packed. This can be done in a shed without much expense by packing behind and between the hives. For more complete packing, a few boards should be placed in front, and the front of the hives packed also. A shed without packing would simply afford protection against the wind. An ordinary open-front shed, such as is used for storing farm machinery, would not be a good place for wintering bees. As a rule, they will winter better if packed out in the open fully exposed to the sun.

Honey Granulates in the Comb

Question.—In taking the honey the latter part of July I found it a cake of sugar. Some of my neighbors are complaining of this also. We have not fed the bees sugar and can not understand why this should be the case.—Mrs. G. F. Worley, Virginia.

Answer.—In some portions of your state the bees sometimes gather honeydew that granulates in a short time after being placed in the cells. In several instances this was found to be what was formerly a rare sugar called melezitose. It is impossible to extract such honey since it often granulates before it is sealed.

Uniting Two Queen-right Colonies

Question.—If two queen-right colonies in their own hive-bodies are placed together with a queen-excluder between, what would happen?—H. O. McCreight, Illinois.

Answer.—When two such colonies are put together in the manner you describe, they usually unite peaceably, although under some conditions there will be some fighting and many bees killed. This can be prevented by placing a sheet of newspaper between so that the bees will unite gradually. If this uniting is done late this month it is not necessary to use the newspaper. In most cases the queen of the upper hive-body will be the one that survives.

Making Feed for Winter

Question.—How much sugar and water should be used in making syrup to feed bees and how long should it be boiled?—Ershel Staat, West Virginia.

Answer.—For feeding late in the season after brood-rearing has ceased to supply winter stores, two parts of sugar to one part of water, either by weight or by measure, is the proportion usually used. The water should first be heated, after which the sugar is stirred in. It is not necessary to boil the syrup, but heat should be applied long enough to be sure that all the crystals are dissolved. If the syrup made this way begins to crystallize in the feeders or in the combs soon after being stored, make it slightly weaker by adding a little more water; or put a teaspoonful of tartaric acid into the syrup before taking from the fire, then apply heat until the syrup boils.

Bees, Men and Things

(You may find it here)

"The honey crop in this county is the poorest in years. There were only two days during which bees gathered nectar to amount to much. White clover did not seem to have much nectar and the bees worked on it but little. Several beekeepers who have a good trade for honey are buying from men in other parts of the state in order to supply their trade."—Charles Floding, Columbiana County, O.

"I have practiced feeding undesirable honey to hogs in a small way, not that I thought it was profitable but it is a quick way of disposing of such honey where it will do some good. When low-grade molasses costs 25 cents a gallon, flour middlings $2.00 per cwt., and oats 40 cents a bushel, what price could be paid for honey to realize equal returns when the honey is fed to hogs?"—Ira B. Eisenbise, Carroll County, Ill.

"Honey is moving fast at $4.00 per case. Some may think $4.00 is too cheap, but for my labor I have realized about $15.00 per colony this year, counting equipment to last ten years'"—Chas. Zick, Fountain County, Ind.

"The honey crop here was a failure this year. My colonies averaged about 35 pounds each. All of the honey was from partridge pea. This is a very reliable producer here. The honey is usually of an amber color but was lighter than usual this year. I think partridge pea should have a place with the other large producers of this state."—H. W. Land, Orange County, Fla.

"Last year over a half million acres (mostly bee range) was burned off and a very small fraction of this will ever come back to its former condition. This season thousands of acres have been burned off. This cuts off an immense amount of bee range which is lost forever. This immense loss of the sages will be noticeable in future years"—M. H. Mendleson, Ventura County, Calif.

"The state bee expert of Travancore has procured four colonies of Italian bees. It is now reported that these bees are rapidly becoming acclimated, and that a fairly strong colony can collect about 16 ounces of honey every day, which is more than our Indian bees do."—O. Marayana, India.

"Our honey crop has been a complete failure so far as surplus is concerned, but most hives have enough honey for winter stores. There is no honey on the local market."—Paul Cutts, Montgomery County, Ala.

"Our bees stored a little surplus in June and ate it up in July. No one alive ever saw so dry a summer before. I doubt if a bouquet as big as one's fist could be picked in our whole town. Bees have been loafing, robbing and stinging all summer."—C. H. Pease, Litchfield County, Conn.

"I wish that beekeepers over the country knew what fine honey could be and is raised here in Massachusetts. Of course, our beekeeping pasture is restricted to certain parts of the state, but even at that there are very few places where honey can not be profitably raised. In the clethra region Dallas Lore Sharp reports his yearly average as 70 pounds. My best colony made 100 pounds last year and farther down on the Cape bees do even better than that."—J. H. Merrill, Bristol County, Mass.

"The honey flow has been short and sweet. The drought cut short the nectar from the clover, but there has been a very good honey flow from willow herb. I have extracted about 125 pounds per colony."—S. D. Clark, Bayfield County, Wis.

"Bees are in good shape. There has been just enough honey to keep them alive. A great many beemen will not make a pound of honey this year. The price is low. It is very hot and dry."—J. N. Mayes, Frio County, Texas.

"I have conducted a bee class in our high school for the last five years and have given 110 talks, 53 of them over radio station KFKX, and 20 of them during the last year."—W. W. Binderup, Kearney County, Nebr.

"My 300 colonies were put into the cellar very heavy with stores last fall and were taken out fairly heavy after 170 days' confinement. It took 5000 pounds of honey and 6000 pounds of granulated sugar to carry them to June 25. North Dakota is always pictured as a paradise for bees, but the above is not so rosy."—Gordon Bell, Grand Forks County, N. D.

(Continued on page 677.)

Sell and Buy Here

CLASSIFIED ADS

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate—7 cents per counted word each insertion. Copy should be in the 15th of month preceding.

HONEY FOR SALE

"We do not guarantee the reliability of honey sellers, although we require strict references from them."—From Our Guarantee and Advertising Conditions.

CHOICE extracted and chunk honey. Henry Stewart, Prophetstown, Ill.

FOR SALE—Clover comb and extracted. F. W. Lesser, Fayetteville, N. Y.

FOR SALE—Extracted and comb honey. M. W. Cousineau, Moorhead, Minn.

NEW clover honey packed in 60-lb. cans at 10c lb. L. A. Junod, Greenville, Ill.

CHOICE clover honey, in 5-lb. pails, 60-lb. cans. C. J. Baldridge, Kendaia, N. Y.

CLOVER honey—comb and extracted. Dr. E. Kohn & Son, Grover Hill, Ohio.

NEW crop clover extracted honey in 60-lb. cans. D. R. Townsend, Northstar, Mich.

WHITE comb sweet clover honey, case 24 sections, $3.85. Marsalek Apiaries, Cadams, Nebr.

WHITE clover extracted honey. Write for prices. Sample, 10c. S. W. Markestad, Canton, Minn.

HONEY FOR SALE, any kind, any quantity. The John G. Paton Co., 217 Broadway, New York City.

FANCY CLOVER extracted packed in new sixties. One case or a car. J. N. Harris, St. Louis, Mich.

FOR SALE—Extracted clover honey by pound, ton or car. Sample, 15c. Victor Apiaries, Chaffee, N. D.

FOR SALE—White clover honey in 60-lb. cans. None finer. Satisfaction guaranteed. J. F. Moore, Tiffin, Ohio.

WHITE clover honey, finest quality, in new 60-lb. cans, at 9c per pound. F. W. Holmes, Coopersville, Mich.

OHIO'S finest comb and extracted white clover honey. Prices on request. Sample, 15c. Geo. Morrison, Mandale, Ohio.

HONEY FOR SALE—All grades, any quantity. H. & S. Honey & Wax Company, Inc., 265 Greenwich St., New York City.

FOR SALE—Michigan's finest white clover honey in new 60-lb. cans. Sample, 15c. C. E. Glover, Kalamazoo, Mich., R. R. 6.

FOR SALE—Fine clover extracted honey in 60-lb. cans and 5-lb. pails and nice white comb honey. H. B. Gable, Romulus, N. Y.

HONEY FOR SALE—White and light amber in 60-lb., 10-lb. and 5-lb. tins. Write for prices. Dadant & Sons, Hamilton, Ill.

NEW crop white clover extracted and chunk comb honey. Write for prices and samples. Kalona Honey Co., Kalona, Iowa.

FOR SALE—A1 white clover extracted honey. Two 60-lb. cans per case, 10c per lb. Leonard S. Griggs, 711 Avon St., Flint, Mich.

WHITE clover comb honey, 8 cases to carrier. W. L. Ritter, Genoa, Ill.

CLOVER comb and extracted honey for sale. L. M. Hubbard, Onsted, Mich.

FOR SALE—New crop white clover comb, 4¼x1⅞ sections. C. Holm, Genoa, Ill.

FOR SALE—White clover comb honey. Charles Guhl, Route 7, Napoleon, Ohio.

MICHIGAN'S FINEST clover honey in cases, 2 60-lb., 10c. John McColl, Tecumseh, Mich.

FOR SALE—Fine Michigan white clover extracted and comb honey. V. L. Watts, Alto, Mich.

BUCKWHEAT comb honey, fancy and No. 1. Write for prices. Noel J. Loucks, Springboro, Pa.

WHITE clover comb honey and extracted in 60s or bottled to suit. Jessup Honey Farms, Carmel, Indiana.

FOR SALE—Fancy white clover comb and extracted honey. R. Hibbard, 131 Benedict St., Watertown, N. Y.

IF YOU need honey, we have it, both clover and buckwheat, in new cans. John Demuth & Son, Pembroke, N. Y.

NEW crop white clover, all produced on bright yellow combs. New cans. Sample, 15c. W. B. Crane, McComb, Ohio.

CLOVER HONEY—New, ripe, pure and delicious, 6-lb. can, $1.25, prepaid to third zone. L. H. Lindemuth, Lemaster, Pa.

FOR SALE—Fancy and No. 1 comb honey, glass-front cases, mixed order, $4.50 per case. N. B. Querin & Son, Bellevue, Ohio.

FOR SALE—White clover extracted honey in new 60-lb. cans, two cans to the case, at $12.00. Adam Bodenschatz, Lemont, Ill.

HONEY—Fine quality New York State white clover extracted, in 60-lb. cans. Low prices for quick sales. J. G. Burtis, Marietta, N. Y.

HONEY FOR SALE—New crop clover extracted now ready. Packed in new cans and cases, 120 pounds to case. Gelser Bros., Dalton, N. Y.

FOR SALE—Finest white clover honey in 60-lb. cans, 9½c per lb.; chunk comb, $8.50 per doz. 5-lb. pails. Jos. H. Hoehn, Ottoville, Ohio.

HONEY FOR SALE in 60-lb. tins. White clover at 12c lb.; white orange at 14c lb.; extra L. A. sage at 11c lb. Hoffman & Hauck, Inc., Ozone Park, N. Y.

CHOICE new white clover honey in extracted comb and chunk. 1-lb. sample, 25c. No stamps. Prices on request. F. W. Summerfield, Grand Rapids, Ohio.

NEW crop extracted clover honey, in new cans and cases, for sale in case or ton lots. Satisfaction guaranteed. Sample, 20c. Prices on request. Harry C. Kirk, Armstrong, Iowa.

EXTRA FANCY raspberry-basswood white comb, $5.00; fancy, $4.50; No. 1, $4.00; No. 2, $3.50; No. 3, $3.00 case. Extracted, 10c in 60-lb. cans. J. J. Holt Co., St. Louis, Mo.

CHOICE clover honey in new 60-lb. cans. W. H. Mays, Goshen, Ind.

FOR SALE—Bulk comb and extracted honeys, clover and light amber. F. E. Hyde, New Canton, Ill.

NEW buckwheat honey extracted, in 60-lb. cans, 7c; No. 1 comb, $3.50 per case, none finer. F. J. Smith, Castalia, Ohio.

40,000 lbs. finest quality white clover honey in new 60's, two to the case. Sample free. Frank Coverdale, Maquoketa, Iowa.

WE still have some white clover comb and extracted honey, also buckwheat comb honey for sale. H. E. Crowther, Jefferson, Ohio.

FOR SALE—Finest quality light amber white clover honey in new 60-lb. cans, $10.50 a case. Large sample, 20c. Martin Carsmoe, Ruthven, Iowa.

RASPBERRY and clover extracted honey in 60-lb. cans, 12½c lb.; 12 five-lb. pails, $9.60. L. J. Carter, 336 M St., S. W., Washington, D. C.

WHITE clover honey, two 60-lb. per case. Excellent quality, heavy body. New crop in new cans. Have car load. Frank Coverdale, Maquoketa, Iowa.

FOR SALE—A-1 diamond clear clover extracted honey. 1929 crop. Case or car lots, 9c per pound. New cans and cases. Virgil Weaver, Moville, Iowa.

FOR SALE—Clover extracted honey in 60-lb. cans, 2 cans to case, 9½c f. o. b. Grandville, Mich. Also white comb honey. Jay Cowing, Jenison, Mich.

1929 CROP white clover honey extracted, extra fine quality in 60-lb. cans. Write for prices. Sample, 10c. Meyer Toom, Knoxville, Iowa, Route 4.

FINEST quality white clover extracted. 120-lb. case or carload. $10.50 per case. Five cases or more, $10.00 case. Arthur Thayer & Sons, Freeland, Mich.

FOR SALE—New crop white clover extracted honey in new 60-lb. cans, two to the case, $12.00. Sample, 10c. A. U. Christner, Rt. 3, Iowa City, Iowa.

FOR SALE—50 tons northern New York water white clover honey, 10c, Watertown. Write for sample and prices in car lots. Leroy C. Keet, Watertown, N. Y.

FINEST clover comb and extracted honey, in 60-lb. cans or 5-lb. pails; also buckwheat comb and extracted. Write for prices. Edward Reddout, New Woodstock, N. Y.

CLOVER or buckwheat honey in new cans and cases. Guaranteed always right. Write for samples and prices, stating quantity wanted. Earl Rulison, R. D. 1, Amsterdam, N. Y.

FOR SALE—60,000 lbs. very light, heavy body, Michigan clover honey. Sample, 10c. Under 1000 lbs., 9½c; over, 9c. F. o. b. Portland. Ralph E. Blackman, Portland, Mich., Rt. No. 4.

15,000 pounds delicious white clover honey, $12.50 per case of 120 pounds. Freight paid to your station within 500 miles of Savanna. Write for large-lot price. Valley View Apiaries, Savanna, Ill.

NEW CROP SHALLOW FRAME COMB HONEY, also section honey, nice white stock, securely packed, available for shipment now. Colorado Honey Producers' Association, Denver, Colo.

COMB and extracted honey, chunk honey, extracted honey in 10 sizes of glass, 2½, 5, 10, an 60-lb. tins. Livest labels in U. S. or plain. Special combination sales case free with $25.00 and $50.00 orders. Write for free samples, prices and illustrated circular showing our packages. Griswold Honey Co., Madison, O., U. S. A.

NEW YORK State comb and extracted honey, buckwheat and clover, any quantity, all size packages. Five-pound pails our specialty. A. I. Root Co. of Syracuse, 124 Williams St., Syracuse, N. Y.

FOR SALE—Well ripened white sweet clover honey. Don't let your customers be without honey. The stock we furnish will please them. Write today for prices. Colorado Honey Producers' Association, Denver, Colo.

FOR SALE—No. 1 clover comb honey, $4.50 per case; No. 1 dark comb, $3.00 per case; 24-section cases, six cases to carrier. Clover extracted, 10c; dark, 7c; two sixty-pound cans to case. H. G. Quirin, Bellevue, Ohio.

HONEY FOR EVERY PURPOSE. We have it in any amount, light amber and white clover basswood, sweet clover, buckwheat. Write us what you need and ask for prices. A. I. Root Co. of Chicago, 224-230 W. Huron St., Chicago, Ill.

EXTRA heavy fancy white comb, $5.50 case; fancy, white, $5.00; No. 1 white, $4.50; No. 2 white, amber, or No. 1 buckwheat, $3.50; fancy buckwheat, $4.00; packed in carriers of 6 cases each. Clover or basswood extracted, 10c in 60-lb. cans. C. B. Howard, Geneva, N. Y.

TOWNSEND QUALITY clover extracted honey. New crop now ready for the market. Left upon the hives clear through the season, making it ripe, rich and fine-flavored. It doesn't cost much more to buy REAL honey, the kind your customers will ask for more "just like the last." Let us quote you on your needs. We wholesale in case lots and job in carload lots. Several carloads for sale from our 21 bee-yards. Write us your needs and it will be a pleasure for us to tell you just what we can furnish this fine honey for. Address E. D. TOWNSEND & SONS. Northstar, Michigan.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTE—All our honey-producing friends should take note of the following from the "Guarantee and Advertising Conditions" of Gleanings in Bee Culture: "We will not guarantee any honey buyer's financial responsibility and advise all beekeepers to sell for cash only or on C. O. D. terms except when the buyer has thoroughly established his credit with the seller."

WANTED—Dark and capping-melter honey. Edw. Klein, Gurnee, Ill.

WANTED—White or light amber extracted honey. W. I. Boggs, DeSoto, Mo.

HONEY WANTED—State quality, quantity and price. D. Steengrafe, 116 Broad St., New York.

WANTED—White clover comb and extracted. E. W. Peirce Co., 345 Cliffwood Ave., Zanesville, Ohio.

WANTED—White honey extracted and buckwheat. Submit samples and quotations. Roscoe F. Wixson, Dundee, N. Y.

WANTED — Clover honey extracted, any quantity. Send sample and lowest cash price. F. M. Babcock, Fredonia, N. Y.

WANTED—Carlots of honey. State quantity, shipping point, and price. Mail sample. Hamilton, Wallace & Bryant, Los Angeles, Cal.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

HONEY PRODUCERS—Tell us what you have to offer in honey. Either comb honey or extracted in 60-lb. tins. State quantity, quality and lowest prices. C. F. Schobert & Co., 407 Broadway, Kansas City, Mo.

BEESWAX WANTED — Will accept shipments of beeswax at regular market price in exchange for bee supplies. The A. I. Root Co., Medina, Ohio.

WANTED—A car or less quantity of white honey, in 60-lb. cans. Mail sample and quote lowest cash price for same. J. S. Bulkley, Birmingham, Mich.

WANTED—Honey, either comb or extracted. Write us if you have surplus honey to sell. We can use any quantity. Sioux Honey Association, Sioux City, Iowa.

HONEY WANTED—Extracted clover and buckwheat. State quantity and how packed and mail sample. Hoffman & Hauck Division, 646 Dean Street, Brooklyn, N. Y.

FOR SALE

SERRATED-EDGED, crumbless eversharp bread knife, 60c prepaid. J. E. Thompson, Medina, Ohio.

MAKE queen introduction SURE. One SAFIN cage by mail, 25c; five for $1.00. Allen Latham, Norwichtown, Conn.

FOR SALE—20-acre bee, fruit, berry, poultry and garden truck farm, with all equipment. Very cheap. Address P. O. Box 703, Tecumseh, Mich.

FORMALDEHYDE N. U. S. P. 40%—Used for effective fumigation of bee hives. Packed in 60-pound cans, at 20c a pound. J. J. Holt Co., St. Louis, Mo.

BEST quality bee supplies, attractive prices, prompt shipment. Illustrated catalog on request. We buy beeswax at all times and remit promptly. The Colorado Honey Producers' Association, Denver, Colo.

METAL EYELETS in your frames will stop the WIRE SAG which is responsible for most SAGGED COMBS. METAL EYELETS, per 1000, 60c. Handy tool for inserting eyelets, 25c; postage, 3c per 1000. Superior Honey Co., Ogden, Utah.

FOR SALE — Fine quality queen-mailing cages; Root quality bee supplies; both comb and extracted honey. Orders filled promptly. Write us or drive over on M. 53, fifty miles north of Detroit. Hamilton Bee Supply Co., Almont, Mich.

29-ACRE farm, ¼ mile to town, seven-room house, cellar, cistern, two wells, barn, chicken-coop, etc. Good land fenced, on fine lake, good place for cows, chickens, bees, etc. Price, $6250. $2250 cash, $4000, ten years at 5%. 25 hives included. Write F. E. Peterson, Sherburn, Minn.

FOR SALE—Honey bottling plant, one acre land, four-room residence, water, gas, phone, electricity. Surrounded with orange groves; 19 miles from Los Angeles. Honey sales business alone nets $2000 year. Can also sell 50 to 200 stands. Disease-free bees. Property sold on easy terms. Prewit's Bee Ranch, Baldwin Park, Calif.

BEES AND QUEENS FOR SALE

WHOLE colonies of bees, if advertised for sale in these columns, must either be guaranteed free from disease, or, if not so guaranteed, the exact condition of the bees and the conditions of sale must be clearly stated in the advertisement; or it will be satisfactory if the advertiser will agree to furnish a certificate of health from some authorized bee inspector at time of sale.

FOR SALE—100 colonies bees, guaranteed disease free. J. J. Holt Co., St. Louis, Mo.

QUEEN bees for sale, 50c each, balance of the season. Graydon Bros., Greenville, Ala., Route 4.

QUEENS and package bees. "Yancey Hustlers." Caney Valley Apiaries, Bay City, Tex.

FOR SALE—40 colonies bees, guaranteed disease free. J. A. Graves, 21 Second St., Hoosick Falls, N. Y.

PACKAGE BEES—Special price for 1930. Price list free. The Crowville Apiaries, J. J. Scott, Prop., Winnsboro, La., Rt. 1.

LEATHER-COLORED Italian queens, $2.00, until June 1; after, $1.00; tested, $2.00. A. W. Yates, 15 Chapman St., Hartford, Conn.

FOR SALE—60 colonies of bees, guaranteed disease free, with equipment and 80-acre farm. Ed. Schmidt, Red Wing, Minn., Rt. 1.

NOTICE—Please do not send me any more orders for queen bees as I will not be shipping any more this season. Robt. B. Spicer, Wharton, N. J.

FOR SALE—TWIN-DEL QUALITY QUEENS and ROOT QUALITY BEEKEEPERS' SUPPLIES. Prompt service. W. G. Lauver, Middletown, Pa.

"SHE-SUITS-ME" Italian queens. One, 80c; 6, $4.00. Send for circular. See advertisement in January issue. Allen Latham, Norwichtown, Conn.

PURE ITALIAN BEES—Untested queens, $1.00; tested queens, $1.50. Will replace any queen that does not please you. Satisfaction given. J. Allen, Catherine, Ala.

CLOSING out for the season. While they last, we are offering our high-grade queens in any quantity for 50c each. J. M. Cutts & Sons, R. 1, Montgomery, Ala.

TESTED QUEENS for the WINTER months. Queens for sale any time, sent anywhere, $1.00 each. Send the order, get the queen, save the colony. D. W. Howell, Shellman, Georgia.

IF you understand beekeeping, will sell at 50c to 60c on the $1.00. Have best outfit on two counts in Iowa; first extracting over 35,000 lbs. Delbert E. Lhommedieu, Colo, Iowa.

FOR SALE—A modern queen-rearing outfit in the heart of Alabama's queen-rearing section. 200 colonies of bees, 70 acres land, good house. For particulars write M, Honoraville, Ala.

FOR SALE—325 colonies of bees in 8-frame hives, with all equipment, for extracted and chunk comb honey. In fine cotton location. Guaranteed free from disease. D. K. Thomas, Lancaster, Texas.

GOLDEN Italian queens. Bees very gentle 6, $5.00; 12, $10.00; 100, $75.00. Package bees in season, 20 per cent to book your order for spring delivery. J. F. Rogers, Greenville, R F. D. No. 3, Ala.

GOLDEN Italian queens. Bees very gentle and cap honey white. State inspected. Satisfaction guaranteed. Tested, $1.25; select tested, $2.25; untested, 90c each; 6, $4.80; 12 or more, 70c each. D. T. Gaster, Randleman, N. C.

ALABAMA queens, bright Italians, bred by a vocational breeder, 1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. Try them and you will order more. Safe arrival guaranteed. H. B. Talley, R. F. D. No. 4, Greenville, Ala.

FOR SALE—600 colonies bees with extracting equipment, fully equipped, located in the heart of the sweet clover belt of North Dakota. With crop or without. Guaranteed no disease. Reason for selling, other interests. Write F. S., care Gleanings, Medina, Ohio.

CHOICE bright Italian queens that are a pleasure to work with and be proud to own. Requeen with stock that has been bred and selected in the North the past 26 years for good winterers, hustlers, gentleness, and fine color. One queen, $1.00; dozen, $10.00; breeders, $10 each. Emil W. Gutekunst, Colden, N. Y.

FOR SALE—25 colonies of bees, guaranteed free from disease. Mrs. Steen Freeman, Wamsley, Ohio, Adams Co.

100 COLONIES bees at a bargain; 10-frame hives, Root supplies; plenty supers, mostly new. Never had disease. Certificate of health furnished. In North Dakota, where the crops never fail. Leo A. Bear, Grand Forks, North Dakota.

DEAR CUSTOMERS—Please accept our sincere thanks for your patronage and hearty cooperation, which is more than appreciated. Satisfactory services guaranteed at all times. Pleasant Garden Apiaries, Pleasant Garden, North Carolina, Carl E. Causey, Mgr.

HOLLOPETER'S Italian queens can be had by return mail until November 20. Bred for business and beauty, they are suited to the needs of every beekeeper. Untested: 1, $1.00; 5, $4.50; 10, $8.00; 20, $15.00. Tested, each, $1.50. J. B. Hollopeter, Rockton, Pa.

BEES FREE—Bees, queens, combs, brood and honey in about 150 Italian colonies free to any one who will pay me full value in cash before Dec. 1, for the 10-frame containers, machine-made, one to four years old, in good order. Never have had foul brood. Particulars by letter. Dr. Stiles, P. O. Box 422, Houston, Texas.

APIARY FOR SALE—On account of the fact that my law practice now demands so much of my time, I am offering for sale my entire apiary, consisting of something over 700 colonies of bees in ten-frame hives, located in sixteen yards, together with all accessories. Bees guaranteed free from disease. Good location in South Georgia near the Florida line, and have no other commercial beekeeper in my territory. Will not sell on credit but anyone with cash can get a bargain. N. L. Stapleton, Colquitt, Ga.

SMALL STOCK, FUR, ETC.

FINEST quality breeding stock mink, raccoon, muskrats, splitcap skunk, silver and red foxes. Full particulars, 25c. Minnesota Fur Ranch, Frost, Minn.

SITUATION WANTED

WANTED—Apiary work in South this winter. Twenty years' experience in own yards. J. A. Field, Fair Haven, Vt.

SITUATION wanted for winter months, preferably in South, by commercial honey producer and state inspector. Some experience as queen-breeder. Good health and habits; married. Box 27, Reeman, Mich.

ROOT EXTRACTOR COLUMN

(A free advertising service to Root customers who wish to dispose of their present extractors as they are purchasing Root machines of greater capacity.)

ROOT 4-fr. power extractor in good condition and 1½-H. P. Fairbanks-Morse gas engine mounted on metal-covered base. Extractor takes shallow or Hoffman frames; reverses combs at full speed; $65.00 if called for; extra charge for packing. Ellsworth A. Meineke, Arlington Heights, Ill.

MISCELLANEOUS

RHODESIA—I want to get in touch with American bee and poultry papers. View, business with advertisers. E. W. Ashe, Box 444, Salisbury, Rhodesia.

THE BEE WORLD—The leading bee journal in Britain and the only international bee-review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy 12 cents in stamps. It is well worth your little trouble. The Apis Club, Brockhill, London Road, Camberly, Surrey, England.

TOO LATE FOR CLASSIFICATION

STURDEVANT clover honey, St. Paul, Nebr.

1680 lbs. extracted clover honey in 60-lb. cans, 8½c, f. o. b. Arthur Clough, Donnellson, Ill.

NEW crop fancy clover honey, comb and extracted. Finest quality. Write Irvin A. Stoller, Latty, Ohio.

MICHIGAN HONEY, new crop of extra fine quality clover extracted honey. Howard Potter, Jr., Ithaca, N. Y.

HONEY for sale. Raspberry-milkweed-clover blend, in 120-lb. cases. Ralph Lenosky, East Jordan, Mich., Rt. 5.

WHITE comb clover honey, case 24 sections, 8 cases to carrier. No. 1, $4.00. Charles Walters, Burgoon, Ohio.

FOR SALE—Buckwheat comb honey, from $3.50 to $4.00 per case. Albert Borning, Interlaken, New York.

NORTHERN Michigan light amber honey, new cans, $9.00 per case, 120 lbs. Sample, 20c. C. J. Freeman, Mesick, Mich.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued and they are in good standing.)

R. W. Baldwin, F. L. Barber, Ira D. Bartlett, M. C. Berry & Co., Bolling Bee Co., Hazel V. Bonkemeyer, Noah Bordner, Capitol Candy School, B. B. Coggshall, Caney Valley Apiaries, Citronelle Bee Co., Crenshaw County Apiaries, C. G. Ellison, W. J. Forehand & Sons, C. J. Freeman, Golden Apiaries, Albert G. Hann, J. K. Harrison, Birdie M. Hartle, Chas. B. Hatton, Sam Hinshaw & Son, Honoraville Bee Co., L. M. Hubbard, Elmer Hutchinson & Son, Jensen's Apiaries, Jasper Knight, E. L. Lane, J. J. Lewis, Louisiana Southern Bee Farms, Lewis A. McIntire, Aubrey M. Middleton, Geo. Morrison, E. E. Mott & Son, Arnold Panning, E. F. Quigley Apiaries Co., Geo. H. Rea, O. D. Rivers, A. H. Rusch & Son Co., Jay Smith, Alfred Soder, L. D. Taylor, Dr. White Bee Co., P. M. Williams, Winkler Honey Co.

HONEY MARKETS

(Continued from page 624.)

larger yield than last year in the light grades, but our darker grades will be considerably less than 1928 crop. The opening prices on the domestic markets are practically the same as last year, with advancing prices in the export markets.—The Ontario Honey Producers' Co-operative, A. G. Halstead, Gen. Mgr., Toronto, Sept. 4.

Relative to market conditions, we have been asking 9½c per pound, freight allowed Minneapolis, Chicago and eastern destinations for extra white and water white honey, but, of course, have not had any considerable success in making sales because of price-cutting by local shippers. Our only recourse has been to avoid these glutted markets and sell in markets where no local supplies are available. We have been making a great many export sales and are shipping heavily into export. We anticipate that shortages will develop in the American market shortly after the new year, when there will be a very great demand for honey at decent prices.—Mountain States Honey Producers' Assn., A. W. B. Kjosness, General Manager.

HEADS OF GRAIN

(Continued from page 663.)

hives were 12-frame Jumbo with 1½-inch summer spacing, and a 2-inch opening in front. The bottom-board sloped up to about ⅜ inch below the frames at the back. I used six inches of chaff between the hive and the outer case, and four inches beneath the floor board. The case would accommodate two Jumbo supers when the top packing was removed, and I provided ventilation at the back when the colonies were strong enough. The system worked very well.—John Hewlett, Albany, N. Y.

League Meeting at Milwaukee It is none too early for beekeepers to begin making plans to attend the annual meeting of the American Honey Producers' League to be held at Milwaukee, Wisconsin, February 3, 4 and 5, 1930. This meeting should be of great interest to anyone who is connected in any way with the beekeeping industry.

Beekeepers' associations should plan to be represented at this meeting. Any association that is not as yet affiliated with the League should affiliate soon so that its representative at the meeting would have authorization to vote in behalf of his association and to take any other active part in the proceedings. The delegate appointed should be provided with the proper authorization by his association as this will be required by the committee on credentials at the time of meeting.

It is too early as yet to say very much about the program which is being planned, except to say that it will be broad enough in scope to be of interest to all. Special attention will be given to important subjects such as recent studies on honey and its uses, marketing, and bee behavior. Local arrangements for this meeting will be made through the Wisconsin Beekeepers' Association. Speakers of prominence will be secured from far and near to take part in this three-day session of educational talks on beekeeping.—J. A. Munro, Secretary, American Honey Producers' League.

WANTED MAN to take charge of apiary. Must be able to handle shipping in case lots and car lots, as well as production end. State experience, age, single or married, where last employed and how long. Must understand the bee game from A to Z. No one but man of energy and ability need apply. State salary expected; permanent position and transportation from any part of United States after six months to man of proven ability. G. M., care of Gleanings in Bee Culture, Medina, Ohio.

TALKS TO BEGINNERS

(Continued from page 669.)

stakes driven into the ground or to staples driven into the bottom-board. In the latter case the staples must be driven and pieces of twine fastened to them before the rim is set over the hive.

If the hives are located in a windy place, they should be protected by some kind of windbreak. On the farm a good windbreak can be made by setting corn fodder against a pole or fence on the windward side.

BEES, MEN AND THINGS

(Continued from page 672.)

"I wish you would write an article on the history of the miniature mating hive. Many believe that Pratt invented it. Allen Latham says that Pratt got it from Alley. Pratt used it in 1901. In reading Quinby I see he used them and that must have been about 1860. Perhaps the back numbers of Gleanings will shed light upon the subject."—Jay Smith, Knox County, Ind.

"I do not paint my hives, but nail on asphalt roofing which gives protection both summer and winter."—Newt. Griswold, Crawford County, Ill.

"Some years ago I attempted to line bumblebees and observed that a bumblebee about half loaded with syrup kicked off one ball of pollen, then the other, while loading up. Was this pure instinct or a trace of reason?"—Robert S. Benson, Oxford County, Maine.

HAVE comb honey supers with fittings for plain sections, also antique furniture. Want wax-melter and bench saw. Raymond L. Mix, Red Wing, Minn.

Sour Honey

Ab is hangin back on our new life and true partnership with our lovin wives. He says it aint so much goin to church all dressed up and helpin in Ladies' Aid work and sayin he has suddenly come to love honest labor. It aint even that, he says, as is makin him gig back, but he says he has had a half dozen dreams about it and every time it ends up by dynamite goin off somethin terrible, and he sees Billy and Flory just before the explosion comes and our lovin wives are

(Continued on page 678.)

For Over 50 Years

Beekeepers in many lands have been pleased. with this most important tool in Beekeeping. Your Bingham Smoker is offered for sale by numerous dealers.

INSIST ON THE BEST

A. G. Woodman Co.
GRAND RAPIDS, MICH.

The Apiarist's Friend

GERMAN SCYTHES AND SICKLES, with "Dangel" cutting edge, permit cutting of grass in the apiary with minimum disturbance of the colonies. Catalog on request.

The Marugg Co., Dept. B, Tracy City, Tenn.

EDWARDS METAL ROOFING

BIGGEST VALUE·LOWEST COST

Buy your metal roofing, shingles, Spanish tile, sidings, etc., DIRECT from the world's largest manufacturer of sheet metal building materials, at BIG SAVINGS. Thousands of satisfied users.

We own our own rolling mills. Enormous output insures lowest production costs. Factory-to-consumer plan makes prices **rock bottom.** You get the benefit. Many varieties. Edwards metal roofs last longer, look better. Resist rust, fire and lightning.

Roofing, shingles, etc., of COPPER BEARING STEEL at special prices. This steel stands the acid test. Outlasts the building to which applied.

Ready Made Garages and Buildings

Low in cost. Easily erected. Permanent. Good looking. All types and sizes to suit your purse and purpose. Now's the time for action. Write for Roofing and Material Book No. 189 and for Garage Book.

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ESTIMATES

EDWARDS MFG. CO.
1083-1083 Butler St.,
Cincinnati, Ohio

SOUR HONEY DEPT.

(Continued from page 677.)

both there too and allays unhurt and speakin. He says he don't go much on dreams but these dreams are different.

I have talked and talked and argued it all to Ab over in his barn ever since I writ the Sept. S. H. dept. But he just hangs back and keeps hearin those explosions. I tell him it won't have to last allays oncet we get our wives' confidences, and we can afford to stand it awhile to get set up in beekeepin strong again and breedin new strains. Perhaps, too, I tell him goin to church and havin on our best clothes and workin as if it wasn't just straight pison to us, won't hurt us as much as he thinks it will. But he keeps harkin back to those dreams and explosions. Why, he says, he's got so bad that way that when the lawn mower strikes somethin like a pebble he just jumps straight up for he thinks it's a explosion and sees our wives standin there after it's all over.

So I can't give the openin moves in our new lives this month as I promised or how our lovin wives will take it, all on account of Ab's dreamin dynamite. But I will keep at Ab till I get him agreed, for winter is comin on and that means the lumber yard sure if prompt measures aint taken to oncet. Me and Ab may be at church next Sunday. I hope so for I don't see no other way.

* * *

Chas. Zick of Covinton, Injianny, sends along encouragin words and puts Jay

(Continued on page 679.)

Patents Pat. Counsel of The A. I. Root Co. Practice in Patent Office and Court.
CHAS. J. WILLIAMSON.
MacLachlan Building Washington, D. C.

KITSELMAN FENCE
STEEL POSTS GATES BARBED WIRE PAINT ROOFING

All Kitselman Fence ***SUPER*-Galvanized** with 99 92-100 per cent **pure** zinc, same quality as on TELEPHONE Wire. Amazing values in Farm, Poultry, Lawn Fence, Steel Posts, Gates, Barb Wire, Paint, Roofing

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Making* PASTRY *at Home

250% Profit

We teach you at home to make delicious cakes, pies, pastries —show you how to sell them at 250% profit and more. Start in your own kitchen—make big money from very beginning. We supply tools FREE of extra charge. Practically no cash required. FREE BOOK explains.

FRANKLIN PASTRY SCHOOL, Dept. C1014,
246 Fifth Avenue, New York, N. Y.

SOUR HONEY DEPT.

(Continued from page 678.)

Smith and Salge where they belong for smougin me on the Powerful Strain northern U. S. A. agency. He's right about that and about his skunk dog bein his best friend for all I know. But he's wrong about recommendin to me to try crossin bees with lightnin bugs and so have em 24-hour workers, etc. Some one, I understand now, tried to get Noah to do that durin his spare time on the ark one day and Noah told him that one was old when he was a boy, and wouldn't do it. Don't nobody try any more to spring that one on me, says Noah, or I'll chase him up the monkey tree. It must have been one of his own family, too.

* * *

Geo. Rea aint a high hatter. He allays looks me up when he comes this way. He

(Continued on page 680.)

Queens 40c Each

High-grade Italians, too. Bred by long experienced breeder from best select stock. Every queen guaranted to please.

G. H. MERRILL APIARIES, Greenville, S. C.

Honey Containers

2½-lb. cans, per reshipp'g case of 24	$1.05
2½-lb. cans, per carton of 100.....	3.80
5-lb. pails, per reshipping case of 12,	1.05
5-lb. pails, per carton of 50.....	3.20
5-lb. pails, per carton of 100.....	6.30
10-lb. pails, per reshipp'g case of 6.	.80
10-lb. pails, per carton of 50..	4.60
60-lb. square cans, in bulk, each...	.35
60-lb. square cans, per case of 1 can.	.60
60-lb. square cans, per case of 2 cans	1.05
24-oz. round glass jars, per case of 24	1.60
16-oz. round glass jars, per case of 24	1.25
6½-oz. tin-top tumblers, per case of 48	1.50

All above prices are F. O. B. Boyd, Wis. Prompt shipment guaranteed.

Write for prices on comb honey shipping cases.

August Lotz Company

BOYD WISCONSIN

If You Are in a Hurry for Queens

Let us serve you. Quality-bred Untested Italian Queens, 50c each, any number. Every queen guaranteed to give you service or money back. Our queens have no superiors and are bred for honey production. Ask our customers.

Package Bees for Spring Delivery

We have enlarged our business to take care of the increased demand and will be better prepared than ever to give you that high quality and service at the lowest possible price. A safe delivery and weight that have surprised so many who have been buying elsewhere. Our packages are light, neat and strong. Cheaper transportation. Let us quote you price on any size order.

Lewis Beeware and Dadant's Foundation

Let us figure with you on your requirements in bee supplies.

York Bee Company - Jesup, Georgia

Achord Queens

Select Young Three-banded Italian Laying Queens, Bred for Service

50c each

ANY NUMBER

Prompt shipment. Safe arrival and satisfaction guaranteed.

W. D. Achord

Fitzpatrick : Alabama

"BETTER-BRED ITALIAN QUEENS"

October, 45c, Last Month

CALVERT APIARIES, CALVERT, ALA.
A. L. Webb, Prop.

SOUR HONEY DEPT.

(Continued from page 679.)

aint a liar either, or wasn't formerly, and probably all the beekeepers in New York and Pennsylvania would say so too. But when he came to see me he told as when he was last in Floridy he stood aside a lake on the shore and with a white string baited with nothin but a wad of white cloth would pull out one shiner after another, the shiners hangin right onto nothin but the cloth. Then he would take the shiners and put 'em on a hook and

(Continued on page 682.)

Mack's Queens

3-BAND

Are as fine as you ever put in a hive. Will have several hundred more for October delivery, so DON'T winter any old queens when you can get such nice young NORTHERN BRED ones for 60c each; $6.60 a doz.; $50.00 a 100. Just try them along side ANY others and they will tell you where to place your future orders.

Herman McConnell

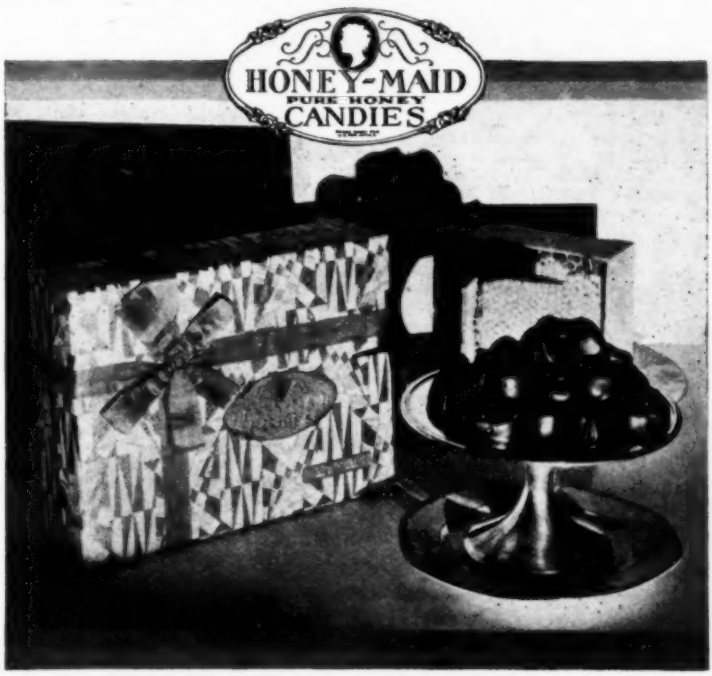
(The Bee and Honey Man)
ROBINSON, ROUTE 2, ILLINOIS

A Word of Appreciation

We wish to thank our many queen and bee customers for their patronage this season. We still have some splendid young laying queens to offer during October and November. Queens are easily introduced late in the season, so don't leave colonies queenless during the winter months.

Queen Prices—Untested Queens: 1, $1.10 each; 10, $1.00 each; 50, 85c each; 100, 75c each.

The A. I. Root Co., Medina, Ohio



Have You Enjoyed This "Honey Maid" Candy?

EVERYONE in the Honey industry will be interested in trying this delightful new line of candies made from pure Honey. They are far more delicious and certainly more healthful than ordinary sweets. Approved and endorsed by **GOOD HOUSEKEEPING** Bureau of Foods and **PHYSICAL CULTURE** Institute of Nutrition.

Many Delicious Varieties

Wide variety of flavors combined with choicest fruits and nuts—each piece covered with delicious mild chocolate. In addition to Assorted Chocolates we offer special packages of Honey Mints, Orange Chocolates, Honey Chews and Honey Kisses. Packed in attractive modernistic boxes that make delightful gifts.

The Honey Candy Co. of America, Youngstown, Ohio

MAIL THIS COUPON --- ENJOY THIS TREAT

Try this marvelous candy at our risk! Simply add your name and address below, enclose $1.50 check or money order, and a full pound box of **HONEY-MAID** Assorted Chocolates, together with booklet, will be sent forward to you at once.

Name .....

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Moore's Strain

Away back in 1879 I commenced rearing Italian queens with the object of improvement constantly in view.

By careful selection during all these years I have succeeded in producing a strain of three-banded, leather-colored Italian bees, known as **MOORE'S STRAIN OF ITALIANS**, which has won a world-wide reputation for honey-gathering, hardiness, gentleness, etc.

Mr. A. K. Whidden, San Jacinto, Cal., says. "In 1913, 80 per cent of the bees in this district died of European foul brood. I had an apiary of 60 colonies headed by daughters of your queens in which I did not lose a colony, and in 1914 they made 360 pounds per colony.

"In 1917 I bought 12 queens of you, and introduced them to diseased colonies. Four of them became too weak to recover, and they all got rapidly worse until it looked impossible for any of them to recover. In eight of them, as soon as the young bees from your queens began to hatch, the disease began to disappear. They cleaned up and stayed clean."

Untested queens, $1.00; 6, $5.00; 12, $9.00. Select untested, $1.25; 6, $6.00; 12, $11.00. Safe arrival and satisfaction guaranteed. Circular free.

I am filling orders by return mail.

J. P. Moore

Morgan - - Kentucky

SOUR HONEY DEPT.

(Continued from page 680.)

catch chubs 6 or 7 ins. long, then use the chubs to catch big bass, and that was the final end in this series of fishin to sizes. He says it's done right along in Floridy, and declares it's so. Does anybody know if Geo. Rea has been in an auto accident or in some way got his head hit bad recent? OLD DRONE.

P. S.—I will keep right at Ab to make him see the light.

Get Running's Queens

And Get Honey—They Satisfy

The kind WE use in our extensive Michigan Apiaries, where we produce honey by the carload.

Choice untested Italian Queens, 75c each; $8.40 per dozen. Tested, 50c each extra. Write for prices in large quantities.

All queens sent from Sumterville, Ala. Address for quick service.

David Running

SUMTERVILLE, ALABAMA

Superior Italian Queens

50 CENTS EACH

ANY NUMBER

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Show What You Pack

A Wonderful Package

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CLEAR WHITE GLASS
EITHER ROUND OR PANELED JARS
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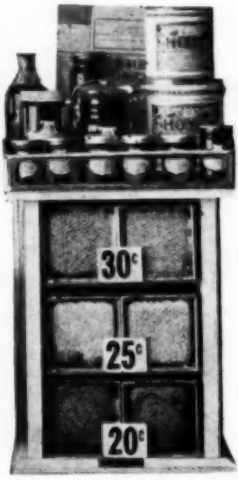

No. 2A Plain.

PAT. APPLIED FOR.

No. 3C Electric

Griswold Honey Co., Madison, O. Willoughby, O., Sept. 16, 1929.

Gentlemen:—In regard to your electric combination honey sales case, No. 3C, which we have been using the past six weeks, will say our honey sales have never been as great as since using your case. In fact, we are averaging better than $2.00 per day and think this can be greatly increased. A display of honey in your clear, clean, sanitary electric case is so pleasing to the eye that its potential sales value can not be estimated. —The Fisher Bros. Co., W. G. Betteley, Mgr., 47 Erie St., Willoughby, O.

YOU KNOW—This store sold under 50c per day of honey till we loaned them this case and sold them $22.50 the first shot and $80.00 more or over $100.00 for August and September only.

YOU KNOW—You can verify this with a couple of red two-cent stamps. And do you fully realize just what this means to your business and mine as honey producers and sellers and the industry at large!!!

YOU KNOW—Now we have succeeded (where others have failed) in placing on the market and on the grocer's counter a case that is handsome, attractive, delivers the goods and sells your honey and one your grocer will be more than glad to give space to on his best counter, not only for the "honey season," but for 365 days every year.

YOU KNOW—It takes nerve and electricity to really do things nowadays, and our electric case will move your honey just as quickly as your auto.

YOU KNOW—You have been going to order eventually, but "Why Not Now"!!!

YOU KNOW—We are shipping them from Maine to Texas, Canada and England.

YOU KNOW—You will reduce the freight and express rate by your ordering in flat, with less bulk, trouble and no breakage.

YOU KNOW—Our last ad sold some less than $1000.00 worth of cases, but we are fairly well caught up, only five more to ship this week. (9-16.)

YOU KNOW—Spray ducoing, electric machinery and heavy buying have again enabled us to lower our prices on our cases, which are correctly made by mitering, dadoing, grooving, slitting and rabbeting, not shown above, but in circular free for the asking. We are here to help you in your sales of honey to get more $$$$ for your honey than you could alone.

SPECIAL PRICES—No. 2 case for 10 days only at $1.00, no finish; $2.00 finished; $3.00 complete. No. 2A, above, complete glass sides, $5.00; and our now famous No. 3C, above, special 1930 model, high pressure electric case, at $8.00, or two for $15.00 complete, flat, no glass. Specifications August issue. Write for circular. All plain cases cut 25%.

GRISWOLD HONEY COMPANY

Pioneers, Developers and Manufacturers of World's Best Honey Cases, Plain and Electric.

MADISON, OHIO, U. S. A.

Bee Supply Manufacturers—Get our special offer, save money, boost honey sales.